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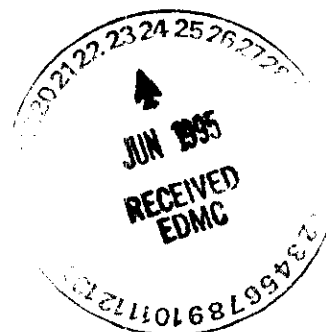
HANFORD CULTURAL RESOURCES LABORATORY ANNUAL REPORT FOR FISCAL YEAR 1989

J. C. Chatters
N. A. Cadoret
P. E. Minthorn

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Pacific Northwest Laboratory
Richland, Washington 99352



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ABSTRACT

This report summarizes activities of the Hanford Cultural Resources Laboratory (HCRL) during fiscal year 1989. The HCRL provides support for managing the archaeological, historical, and cultural resources of the Hanford Site, Washington, in a manner consistent with the National Historic Preservation Act of 1966, the Archaeological Resources Protection Act of 1979, and the American Indian Religious Freedom Act of 1978. A major task in FY 1989 was completion and publication of the Hanford Cultural Resources Management Plan, which prioritizes tasks to be undertaken to bring the U.S. Department of Energy - Richland Operations into compliance with federal statutes, relations, and guidelines. During FY 1989, six tasks were performed. In order of priority, these were 1) conducting 107 cultural resource reviews, 2) monitoring the condition of 40 known prehistoric archaeological sites, 3) assessing the condition of artifact collections from the Hanford Site, 4) evaluating three sites and nominating two of those to the National Register of Historic Places, 5) developing an education program and presenting 11 lectures to public organizations, and 6) surveying approximately 1 mi² of the Hanford Site for cultural resources.

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EXECUTIVE SUMMARY

The Hanford Cultural Resources Laboratory (HCRL) was established by the U.S. Department of Energy-Richland Operations (DOE-RL) in 1987 as part of the Pacific Northwest Laboratory (PNL). The HCRL provides support for managing the archaeological, historical, and cultural resources of the Hanford Site, Washington, in a manner consistent with the National Historic Preservation Act (NHPA) of 1966, the Archaeological Resources Protection Act of 1979, and the American Indian Religious Freedom Act of 1978. This report summarizes activities of the HCRL during fiscal year (FY) 1989.

HCRL responsibilities have been set forth in the Hanford Cultural Resources Management Plan as a prioritized list of tasks to be undertaken to bring the DOE-RL into compliance with federal statutes, regulations, and guidelines. Although the plan was not finalized until 1989, the task list was used to guide cultural resources management activities during FY 1989 and is the outline for this report.

A major task in FY 1989, although not on the prioritized list, was completion and publication of the Hanford Cultural Resources Management Plan (HCRMP). Multiple drafts of the plan were reviewed by DOE-RL, the Washington State Historic Preservation Officer, the Advisory Council for Historic Preservation, the Wanapum band, Yakima, Umatilla, Nez Perce, and Colville Tribes, the National Park Service, and the U.S. Army Corps of Engineers. Following extensive revisions in response to comments from these groups, the HCRMP was published in June 1989.

The highest priority task of the HCRL is to conduct cultural resource reviews, pursuant to Section 106 of the NHPA, for each proposed ground-disturbing or major building alteration/demolition project on the Hanford Site. During the first 11 months of FY 1989, Hanford contractors requested 107 Section 106 reviews. Seventeen of these requests required archaeological surveys. The surveys completed before September 1 covered a total of 91.5 ha and resulted in the discovery of seven prehistoric archaeological sites and one historic archaeological site. Projects were relocated to avoid any potential impact to two sites, one located in the vicinity of the Hanford Solid Waste Landfill and the other near the 300 Area. Site 45BN163 has been identified as potentially eligible for the National Register, and a finding of effect for the 300 Area Treated Effluent Disposal Facility will be prepared in early FY 1990.

The second priority task is a monitoring program designed to determine the current condition of cultural resource sites and to establish whether the DOE-RL's cultural resource management and protection policies are effective.

Following procedures established in the HCRMP, staff monitored the condition of 40 sites including six cemeteries, 15 sites contained within properties listed on the National Register of Historic Places, and 19 sites not so listed. Five conclusions were drawn from observations made during the first year's monitoring: 1) cemetery sites show the effects only of natural erosive processes, with the exception of site 45BN157b, which until it was recently fenced was periodically looted by relic collectors, 2) with the exception of a fire lane cut across National Register site 45BN149, site activities are having little direct impact on sites within the Hanford Site security fence, 3) archaeological sites within the security fence show no evidence of recent illegal digging; however, indications are that surface collection of artifacts continues, 4) areas outside the security fence, particularly those near roads and boat launches, are being impacted by relic collectors, who have been digging into intact portions of some sites, and 5) livestock are damaging archaeological sites in Franklin County, as indicated by increased erosion of heavily trampled shoreline areas.

Based on these observations, the HCRL makes the following recommendations.

1) Except for site 45BN157b, which needs and has received protection in the form of a cyclone fence, cemeteries can continue to be left alone. They should, however, be subject to surveillance by security personnel. 2) Damage to site 45BN149 demonstrates the need to revise procedures for Section 106 compliance. 3) The apparently continued practice of collecting artifacts from the surface of sites by Hanford workers demonstrates the need for an education program on cultural resource laws and values. 4) Increased surveillance of sites on the Franklin and Grant County shorelines is badly needed to reduce the activities of relic collectors and enforce the Archaeological Resources Protection Act. 5) Action should be taken to mitigate stock damage to sites that are in Franklin County.

The third priority set by the HCRMP, following compliance guidelines in the Archaeological Resources Protection Act, is to establish a curation system for artifacts and associated records. The first step in planning for artifact and records curation is to ascertain the location of collections, which was a task set for FY 1989. Collections have been located at the University of Idaho, Washington State University, Mid-Columbia Archaeological Society in Richland, Washington, and the home of a Moxee City resident. All curators of these collections have agreed to cooperate with HCRL in assessing curation needs for these materials.

The fourth priority task is evaluation of cultural resources for possible nomination to the National Register of Historic Places. Evaluation procedures were conducted for three properties during FY 1989. Two of these, the Hanford B Reactor and the Gable Mountain/Gable Butte Cultural District are believed to be eligible, and nomination documents have been prepared and submitted to DOE-RL for action. Evaluation is under way for the Wahluke Archaeological District,

a group of two sites previously nominated to the National Register but rejected for lack of information. Sites in the proposed Gable Mountain/Gable Butte Cultural District were inspected, and five were found to be potentially eligible for the National Register. Subsurface testing, which is required for archaeological evaluations, was conducted at the Wahluke site with assistance from Central Washington University. The site was found to contain a pithouse village dating back at least 1100 years and a campsite that may date between 4000 and 6000 years. Data analysis is not yet complete, but preliminary findings show strong indications of scientific significance for this site. Subsurface tests will be needed at at least one other site.

The fifth task is public education. The education program, which was planned in FY 1989, consists of three parts, targeting elementary and middle school students, secondary school students, and the general public. Implementation of this plan was begun and included discussions with curriculum committees of school districts in the Tri-Cities area, preparation of a draft brochure on cultural resources management at Hanford by PNL's public relations staff, lectures to five adult organizations, and minor assistance with the DOE-RL's Native American Awareness Week.

The lowest priority task is the archaeological survey of undeveloped areas of the Hanford Site, as required by Section 110 of the NHPA. The HCRMP specifies that a 10% stratified random sample of site lands will be surveyed in the next 5 years to refine an existing model of archaeological site distributions. Because of the low priority of this task and the high level of effort required for other tasks this fiscal year, only 1 mi² (2.6 km²) could be surveyed in FY 1989. Sixteen survey plots, each with an area of 1/16 mi² (0.16 km²), were located in stabilized dunes and in a variety of environments near the foot of a mountainous area. Plots in stabilized dunes contained only one isolated artifact, whereas plots in mountain slopes and nearby settings contained a variety of prehistoric and historic archaeological sites and isolated artifacts.

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1.0 INTRODUCTION

The Hanford Cultural Resources Laboratory (HCRL) was established by the U.S. Department of Energy-Richland Operations (DOE-RL) in 1987 as part of Pacific Northwest Laboratory (PNL). The HCRL provides support for managing the archaeological, historical, and cultural resources of the Hanford Site, Washington, in a manner consistent with the National Historic Preservation Act (NHPA) of 1966, the Archaeological Resources Protection Act of 1979, and the American Indian Religious Freedom Act of 1978.

During the 1988 fiscal year (FY), the HCRL prepared a draft plan for managing the cultural resources of the Hanford Site that, among other things, established a prioritized list of tasks to be undertaken to bring the DOE-RL into compliance with federal statutes, regulations, and guidelines (see Section 2.0 of this report). Although the plan was not finalized until 1989, the list of tasks (Table 1.1) was used to guide cultural resources management activities during FY 1989.

This report is structured according to the priorities listed in Table 1.1. Each task is discussed in a separate section, except for Tasks 3 and 4, which are combined because they are identical in tactical terms. Each section includes an explanation of the task and a description of the tactics used in performing it, as appropriate. Results of the task or the products of task performance are then described. Supporting data and descriptive detail for task 2 and tasks 3 and 4 combined are presented in Appendixes A through C, respectively.

TABLE 1.1. Priority Listing of Tasks Performed by the Hanford Cultural Resources Laboratory, Fiscal Year 1989

Priority	Task Description
1(a)	Complete and publish Hanford Cultural Resources Management Plan.
2	Conduct National Historic Preservation Act Section 106 compliance reviews.
3	Verify, evaluate, and document the condition of extant cultural resources as a baseline for management.
4	Monitor the condition of properties listed on or eligible for the National Register of Historic Places on a 3-year rotating schedule.

TABLE 1.1. (contd)

Priority	Task Description
5	Locate collections and records from authorized archaeological investigations of the Hanford Site.
6	Evaluate known cultural resources for eligibility to the National Register of Historic Places (three identified, see Section 6.0)
7	Plan and initiate public education.
8	Evaluate current model of archaeological resource distributions by a sample inventory of 10% of site lands (initiate in this fiscal year).

(a) Not included in Hanford Cultural Resources Management Plan priorities listing.

2.0 THE HANFORD CULTURAL RESOURCES MANAGEMENT PLAN

A major task of the Cultural Resources Project in FY 1989 was completion and publication of the Hanford Cultural Resources Management Plan [HCRMP (Chatters 1989)]. As stated in the plan's introduction, "... the [U.S. Department of Energy (DOE)] has been directed by Congress and the President to provide leadership in the preservation of prehistoric, historical, and cultural resources on lands it administers and to manage these in a spirit of stewardship for future generations. The purpose of this document is to describe how the (DOE-RL) will meet those responsibilities on the Hanford Site...."

The plan has three main sections and 10 appendixes. Section 1.0, the Introduction, states the purpose, intent, and objectives, provides summaries of the statutory requirements for cultural resources management, and briefly summarizes the Hanford Site and its cultural resources as currently understood. Section 2.0 describes the DOE mission and activities at the Hanford Site and addresses the potential past and future impact of those activities on cultural resources. Section 3.0 details the policies and procedures for managing cultural resources and considering the impact of DOE policies and projects on the free practice of traditional religions. Specific policies and procedures are developed for preserving historic properties, protecting historic properties, and avoiding interference with religious practice. Cultural resource management activities through FY 1994 are planned and prioritized in the HCRMP. Appendixes A through E provide supporting and background information on laws, previous cultural resource management of the Hanford Site, regional ecology, paleoecology paleontology, human prehistory and history, and cultural resource evaluation. Other appendixes present forms for data collection and management, Washington State policies for archaeological surveys, and lists of cultural resource surveys and historic properties.

Three drafts of the HCRMP were produced in FY 1989 before the final plan was printed. The first two of these drafts were internally reviewed by DOE-RL, the State Historic Preservation Officer, and the Advisory Council for Historic Preservation. Following necessary revision, the plan went to the Wanapum, Yakima, Umatilla, Nez Perce, and Colville Indians, the National Park Service, and the U.S. Army Corps of Engineers. Extensive revisions were made following receipt of comments from these groups, and after response to DOE-RL comments on the final draft, the final plan was published in June 1989.

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3.0 SECTION 106 COMPLIANCE REVIEWS

As required by Section 106 of the NHPA, the DOE-RL reviews each proposed ground disturbing or building alteration/demolition project to determine if it may impact any cultural property that is listed on or eligible for the National Register of Historic Places (National Register). This is accomplished through the cultural resources review process (Chatters 1989, Section 3.1.1). For efficiency, cultural resource reviews are classified according to four criteria: 1) whether the project entails maintenance, demolition, or new construction, 2) whether the area has been previously disturbed, 3) whether the project involves an existing structure or building, and 4) the cultural resource sensitivity of the area in which the activity is planned. The cultural resource reviews are divided into six classes: I) maintenance in a disturbed, low-sensitivity area, II) maintenance in a disturbed, high-sensitivity area, III) new construction in a disturbed low-sensitivity area, IV) new construction in a disturbed, high-sensitivity area, V) projects involving undisturbed ground, and VI) projects involving demolition or remodeling of existing structures.

During the 1989 fiscal year, up to and including September 1, 1989, Hanford contractors requested 107 cultural resource reviews (see Appendix A, Section A.1). Most of these (64) were of the Class III and IV types, followed by Class I and II (17), Class V (17), and Class VI (3). Six reviews were literature reviews only and do not fit any of the classes. An additional 23 cases, entailing small-scale excavation to repair leaks or set posts or larger-scale excavations in already-cleared areas, were handled with the signature of excavation permits and were not given individual case numbers.

The largest number of requests were for the 200 and 300 Areas (Figure 3.1), 37 and 30, respectively. Because the fenced portions of the 200 Areas have been surveyed intensively for cultural resources and found to contain only one significant cultural resource, Class I through IV reviews of the 200 Area were handled by reference to that finding. Class V cases were all outside the 200 Area fences. There were 22 requests for reviews of the 100 Areas and 11 for the 600 Area. The remaining requests were divided among the 400, 700, 1100, and 3000 Areas.

3.1 CLASS V SURVEYS

Seventeen Class V reviews were requested during FY 1989, but some of them came in too late or were of such low priority that they were not completed in time for the detailed results to be included in this report (see Appendix B, Section B.2). The late arrivals will be included in the

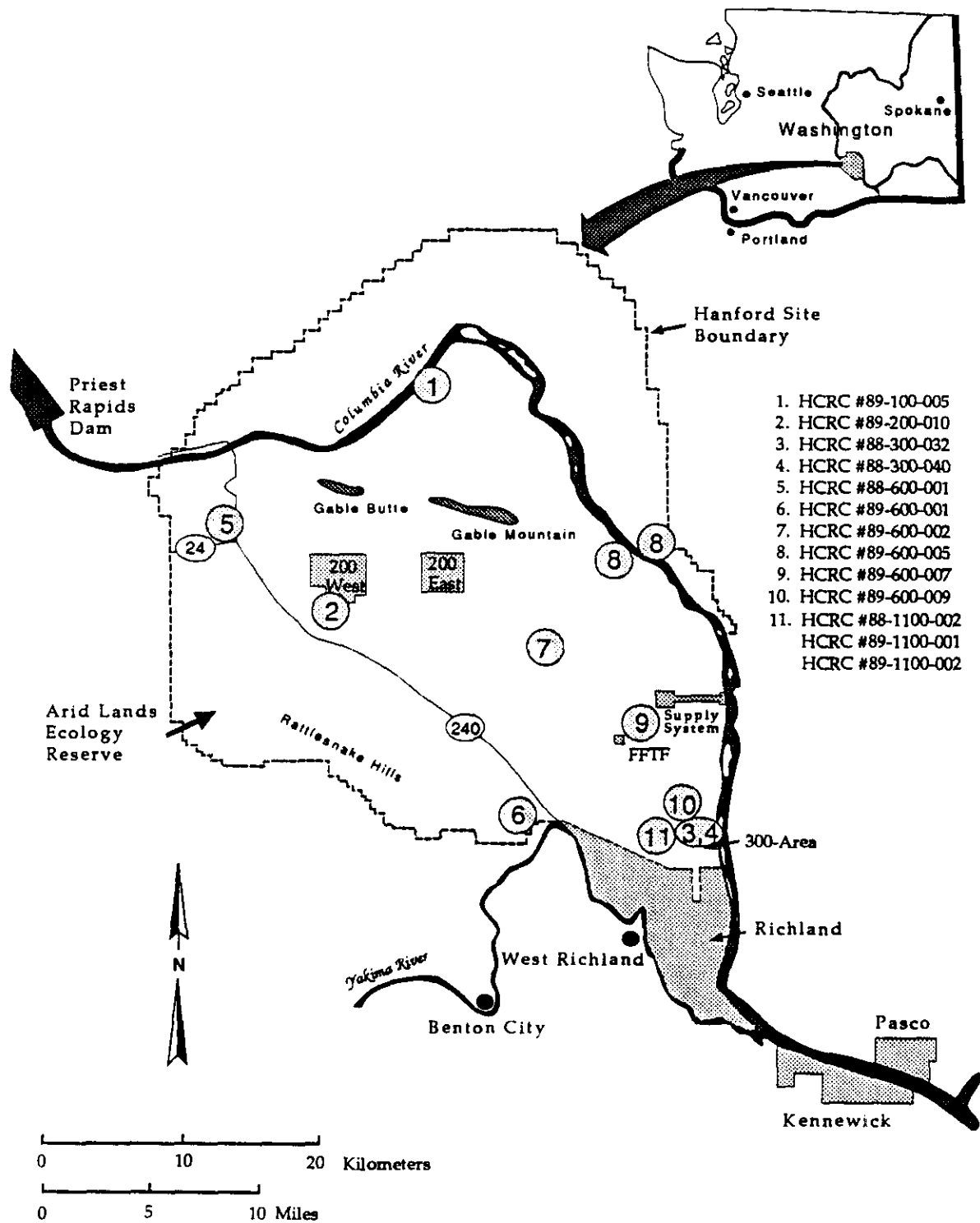


FIGURE 3.1. Locations of Class V Section 106 Reviews

FY 1990 report. The 11 surveys that were completed covered a total of 91.5 ha and were distributed from the 100 N Area to the 1100 Area in North Richland (cases 88-1100-002, 89-1100-001, and 89-1100-002). Most surveys were either in the 600 Area (5) or 1100 Area (2). The largest areas covered were cases 89-200-010, which entailed survey of a 35-ha borrow area south of the 200 West Area, and case 89-600-002, a 25-ha area around the Hanford Solid Waste Landfill. All of these surveys were located well away from the Columbia River. Cases 89-300-019 and 89300023, which have not yet been completed, are within 400 m of the Columbia River, and case 89-300-019 appears to intersect a site that is eligible for the National Register. Case 88-600-011, which is under way, is a series of water improvements in the Saddle Mountains that appears to intersect several small archaeological sites.

3.2 CULTURAL RESOURCES FOUND

During FY 1989, HCRL staff recorded few cultural resources in areas subject to Section 106 Reviews. Three literature reviews (cases 89-100-016, 89-300-021, and 89-300-022) showed that archaeological sites existed in the project areas. These cases were overviews for environmental assessment of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) operable units, and evaluations and findings of effect will be developed for sites within those units in FY 1989. Seven other projects contained cultural resources (cases 88-200-056, 89-200-010, 88-300-040, 89-300-019, 89-300-023, 88-600-011, 89-1100-001, and 89-1100-002).

Twelve prehistoric archaeological sites and one historic archaeological site were found. Eleven of the prehistoric sites are located on Saddle Mountain (case 89-600-011), and include six lithic (chipped stone) scatters that are stone quarrying or processing areas, and three cairns. The remaining prehistoric site is located near the Hanford Solid Waste Landfill (89-600-002), and is a lithic scatter containing resharpening and thinning flakes. The historic site is a scatter of cans from around the turn of the century and is located near the 300 Area (89-300-040). Isolated artifacts occurred in six cases, and consisted of tin cans, bottles, and lithic flakes; all were collected and reside in the HCRL files. Cans and bottles were found in the 200, 300, and 1100 Areas. Lithics were in the Saddle Mountains and the 300 Area. An extensive early irrigation system was found in association with homestead remains at McGee Ranch.

Projects were relocated to avoid any potential impact to the two sites in the vicinity of the Hanford Solid Waste Landfill and the 300 Area, regardless of their significance. Site 45BN163 has been identified as potentially eligible for the National Register, and a finding of effect for the

300 Area Treated Effluent Disposal Facility will be prepared in early FY 1990. The sites on Gable Mountain are current discoveries and have not been evaluated.

4.0 THE MONITORING PROGRAM: VERIFY, EVALUATE AND DOCUMENT THE CONDITION OF CULTURAL RESOURCES AS A BASELINE FOR MANAGEMENT: MONITOR CONDITION OF HISTORIC PROPERTIES

"As manager of the Hanford Site, the DOE is assigned the stewardship of all archaeological resources, traditional use areas, paleontological deposits, and historic properties onsite. DOE-RL therefore has the responsibility for determining whether its management and protection policies are effective and when they are inadequate. To determine the impact of DOE policies and to safeguard cultural resources from destruction by natural processes or unauthorized excavation and collection, the HCRL will maintain a monitoring program" (Chatters 1989, page 3.28). That monitoring program is designed to inspect each cemetery site once a year, to inspect each site listed on the National Register at least every 3 years, and each nonlisted site every 5 years. Monitored sites that are found to be receiving natural or anthropogenic impacts will be reinspected annually, at a minimum. Monitoring results are used in planning for cultural resource site management and protection and in identifying needs for corrective measures.

In addition to monitoring specified in the HCRMP, the HCRL will more frequently monitor areas within 5 miles (8 km) of the proposed Vernita boat launch, located just upstream of the Vernita Bridge in Grant County, Washington, through a memorandum of agreement with the State Historic Preservation Officer and Advisory Council for Historic Preservation. These sites will be visited before construction of the proposed launch and, if constructed, 6 months after the launch is built, once a year for 3 years, then every 3 years thereafter.

To select the sample of sites to be inspected in FY 1989, laboratory staff first identified cemeteries known to exist on the Hanford Site. Staff then stratified the remaining National Register sites according to site type as listed on the State of Washington Archaeological Site Record. Sites were listed as housepit sites, open camps, and fishing stations, following definitions employed by Rice (1968a, b) for these categories. Site age was not included as a category because so few of the site records contain this kind of information. A random 33% sample of National Register sites was chosen. An additional group of sites not yet listed on the National Register, but situated within the area potentially frequented by boaters using the proposed Vernita boat launch, was added to the list. Including the cemeteries, this made a list of 42 sites.

At the time of this writing (September 1989), 40 sites had been inspected (Figure 4.1), but the two cemeteries located on islands had not yet been visited. Monitoring results are described below on a site-by-site basis, and findings are summarized in Table 4.1.

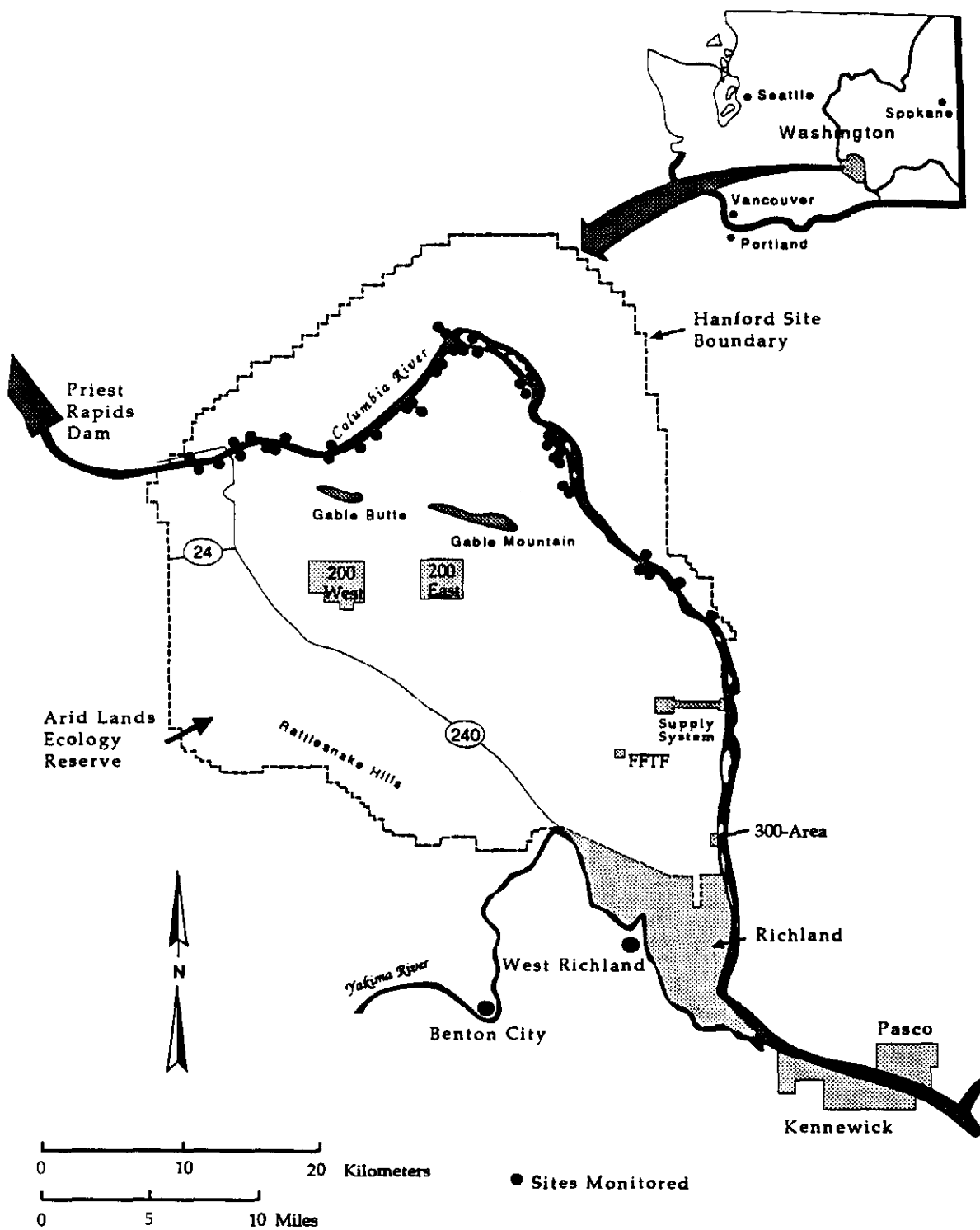


FIGURE 4.1. Locations of Archaeological Sites Monitored in Fiscal Year 1989

TABLE 4.1. Results of Fiscal Year 1989 Archaeological Site Monitoring

Site No.	Monitoring Group	Type of Disturbance ^(a)	Conclusion, Recommendation
45BN118	National Register	none	(b)
45BN119	National Register	SC	(b)
45BN121	National Register	D	Revise National Register listing
45BN124	Cemetery	none	(b)
45BN125	National Register	SC (minor)	(b)
45BN126	National Register	none	(b)
45BN128	Cemetery	WE	(b)
45BN132	National Register	none	Remove from National Register
45BN133	National Register	none	(b)
45BN134	National Register	none	Remove from National Register
45BN139	Cemetery	none	(b)
45BN140	National Register	WE, SC(?)	Include in 45BN139
45BN144	Non-Register	none	Not significant
45BN145	Non-Register	SC(?)	Not significant
45BN146	Non-Register	WE	Test for significance
45BN147	Non-Register	none	Not a site, remove from listings
45BN148	Non-Register	Soil borrowing	80% destroyed, not significant
45BN149	National Register	TP, DOE bulldozing	Fill pits, end bulldozing of site
45BN151	Cemetery	none	(b)
45BN152	Non-Register	SC	Not significant
45BN153	Non-Register	SC(?)	Not significant
45BN154	Non-Register	none	Not a site, remove from listings

TABLE 4.1. (contd)

Site No.	Monitoring Group	Type of Disturbance ^(a)	Conclusion, Recommendation
45BN155	Non-Register	none	Not a site, remove from listings
45BN156	Non-Register	none	Not a site, remove from listings
45BN157a	Non-Register	SC, CD, WE, PR	Nominate, protect, surveillance
45BN157b	Cemetery	SC, CD, WE, PR	Nominate, protect, surveillance
45BN178	Non-Register	SC, WE	Add to National Register
45BN179	Non-Register	see 45BN149	Part of 45BN149 on National Register
45BN180	Non-Register	see 45BN149	Part of 45BN149 on National Register
45FR258	National Register	SC, CD, WE, SD	Surveillance, cattle fencing
45FR260	National Register	SC, CD, WE, SD	Surveillance, cattle fencing
45FR262	National Register	SC	Surveillance
45GR302a	National Register	TP, SC, CD	Surveillance, fill pits
45GR306b	Non-Register	SC(?), WE, PR	Surveillance, nominate
45GR306c	Cemetery	WE	Incorrect location, is at 45BN306a/b
45GR315	Non-Register	none, actual site shows CD	Incorrect location, surveillance
45GR316	Non-Register	none	Test for significance
45GR317	National Register	SC, CD	Surveillance
45GR318	Non-Register	SC, WE	Not significant
45GR320	Non-Register	none	Not significant

(a) Abbreviations for disturbance types are CD, collector digging; SC, surface collecting; TP, open test pits; SD, stock damage; WE, wind erosion; D, digging apparently not by collectors, PR, public recreation.

(b) No recommendation.

4.1 CEMETERY SITES

The purpose of inspecting sites identified as cemeteries by Wanapum Elders or through the discovery of graves is to evaluate their condition and document any erosion, vandalism, looting, or unintentional disturbance. Such information can be used as background for developing and maintaining effective measures for protecting these sites.

Six cemetery sites have been inspected: 45BN124, 45BN128, 45BN139, 45BN151, 45BN157b, and 45BN306c. Results of inspections are shown in Table 4.1; details are presented in Appendix B.

Monitoring results show that site renumbering or map corrections are needed for two cemeteries. Site 45GR306c has been almost entirely deflated by wind, yet no sign of human remains or grave markers can be found. Cairns marking graves do occur in dunes at 45BN306a and 45BN306b, which more closely fit the description given by Krieger (1928) for the cemetery location. The cemetery numbered 45BN139 is marked on maps approximately 300 m south of its actual location, and it is contiguous with 45BN140, which does contain human remains and grave marker materials.

Damage to cemeteries varies, but in general sites in this category are undisturbed by modern human activity. Wind erosion is the most severe type of damage observed. Sites 45BN124 and 45BN151 are in stabilized dunes and exhibit no erosion, but erosion is evident at 45BN306, and wind erosion is severe enough to expose human remains at 45BN128 and 45BN139. Small-scale looting was evident at 45BN157b, which is located in an area used heavily by the public for a variety of activities. Action was therefore taken in cooperation with representatives of the Wanapum band and Yakima Tribe to construct a cyclone fence around the cemetery.

4.2 SITES LISTED ON THE NATIONAL REGISTER

Seventeen of the monitored sites (Figure 4.1), in addition to five of the cemeteries, are listed on the National Register of Historic Places or are included in larger sites that are listed. These listed sites include the Savage Island (45BN118, 45BN119, 45FR258, 45FR260, 45FR262), Hanford North (45BN125, 45BN126, 45BN132, 45BN133, 45BN134), Locke Island (45BN140, 45GR302a), and Ryegrass Archaeological Districts [45BN149 (and enclosed 45BN179, 45BN180)], and the Hanford Island (45BN121) and Paris (45GR317) sites. Concerns were slightly different in the case of National Register listings. Evidence of damage, looting, or erosion were again of primary importance, but whether the site could be found and actually

appeared to contain data of scientific significance were also important. In some cases, absence of the site as described or the lack of evidence for scientific significance may warrant removal of a site from the National Register.

Observations made by HCRL staff are presented in Appendix B (Section B.2). Two sites (45BN132 and 45BN134) either could not be found or lacked sufficient scientific potential to justify National Register listing. Another, the Hanford Island site (45BN121), was found to be two sites, and neither of them was the housepit village described in nomination materials. Rather than being a late prehistoric village, these sites are much older campsites used for limited activities.

Most of the sites inside the Hanford Site security fence in Benton County exhibited no signs of damage, except for minor wind erosion and probable surface collection by site workers (Table 4.1). Site 45BN149, which includes two other sites (45BN179 and 45BN180) within its boundaries, shows no sign of collection activity, but it is the only site monitored that has been damaged directly by Site activity. A 15-m-wide firebreak was cut in 1989 across the upper terrace of the site, damaging an unknown amount of a probable Cascade Phase component [ca 4500-7000 year B.P. (B.P. is radiocarbon year before 1950 A.D.)]. The firebreak was cut without a prior Section 106 review. In addition to this recent damage, there is a large archaeological excavation pit, dating back to the 1970s, that has not been backfilled. If this pit continues to remain open, the site may be damaged by bank slumping and possibly by relic collector activities.

Damage to National Register sites is more severe on the Franklin and Grant County sides of the Columbia River and on the one island inspected. Sites in the Savage Island Archaeological District (45FR258 and 45FR260) are being damaged both by relic collectors and livestock. Collector excavations, occur in intact portions of 45FR258. Surface disturbance by these two agents is promoting wind erosion. Test pits remain open at 45GR302a, and this site and the Paris site (45GR317) show signs of continuing relic collector activity. Surface collecting and digging are evident in both cases, although the damage is confined to deflated areas along the bank of the Columbia River.

4.3 SITES NOT LISTED ON THE NATIONAL REGISTER

Sixteen sites that have not been nominated to the National Register were also reviewed in 1989 (Table 4.1). Five of these are in the proposed Wahluke Archaeological District (Rice 1980), at which reevaluation activities were conducted during this fiscal year. These sites are discussed in Section 6.3. The remaining sites were inspected to determine if they did in fact exist, to determine what damage, if any, they had received, and to screen sites for their National Register potential.

Sites found to have potential will be evaluated in more detail in the near future. Appendix B (Section B.3) presents the results of monitoring.

Based on monitoring observations, one site (45BN157a) should be nominated to the National Register, and test excavation should be conducted at two others (45BN146 and 45GR316) to obtain data for evaluation and possible nomination to the National Register. The remaining sites are either nonsignificant or could not be found. Four sites (45BN147, 45BN154, 45BN156, and 45GR315) do not appear to exist. No artifacts of any kind were found at or near mapped locations. A site was found approximately 400 m upstream from 45BN315, but the site did not resemble its description and must be considered a new site.

Damage to this group of sites is similar in kind and geographic distribution to the National Register group. Sites inside the security fence surrounding the Hanford Site showed signs of surface collection. Things such as net sinkers, which had been reported by the discovery team, could not be found. No other damage was evident inside the fence, but sites outside the fence consistently showed signs of relic collector activity. Site 45BN157a was the most severely damaged, but recent digging was more evident at the newly discovered site near the nonexistent 45BN315.

4.4 CONCLUSIONS AND RECOMMENDATIONS

Five conclusions can readily be drawn from observations made during the first year's (FY 1989) monitoring. First, cemetery sites are experiencing only natural erosive processes, with one exception. Second, Hanford Site activity is having little direct impact on sites within the security fence in Benton County. One exception to this, site 45BN149, is a case of an activity slipping through the Section 106 review process. Second, Hanford Site workers have not been disturbing archaeological sites by digging for artifacts, but they appear to have been collecting artifacts from the surface to the extent that projectile points and net sinkers that were so often reported in 1968 are rarely seen. Third, areas outside the security fence, particularly those near roads and boat launches, are being impacted by relic hunters to a minor degree, including some digging activity. Worst affected are the Paris site (45GR317, 45BN258 in the Savage Island Archaeological District) and the Vernita site (45BN157a and b). Last, livestock, notably cattle, are damaging archaeological sites in Franklin County; their trampling is causing increased erosion.

Cemeteries should be subject to frequent surveillance by security personnel. Cemeteries are all located in dunes, which makes them predisposed to wind erosion. Wind erosion is a natural process, and we believe those who buried their compatriots in dunes were knowledgeable enough

to expect wind to expose them eventually. It does not seem reasonable to attempt to alter or halt this process. However, erosion that exposes artifacts and bones may invite looting, so surveillance of wind-eroded cemeteries is necessary. However, protection is essential for 45BN157b. This protection was implemented in the form of cyclone fencing and posting.

Damage to site 45BN149 identifies a need to revise the Section 106 process during FY 1990. We have learned that the cutting of fire trails is not subject to excavation permitting, which has been the only vehicle thus far used to initiate and implement the Section 106 review process.

The fact that Hanford workers apparently continue to collect artifacts from the surface of sites demonstrates that an education program is needed and should be directed at people who frequent the field. Such a program is part of the HCRMP and should be implemented as soon as possible. Radiation monitors, biologists, and security personnel are most active in the field, and should be the first included in of this effort.

The most serious problem among the five noted is the continued activity of relic collectors at sites both on and potentially eligible for the National Register. Most severely affected sites are outside the security area, and all except 45BN157 are on land managed for the DOE by other agencies. Access to the sites is sometimes obtained by road, but more often by boat. The most severely affected site, 45FR268, is approachable by road. Boat launches are near sites 45GR302a and 45GR317, which are the second most seriously damaged. Sites approachable only by boat are being exploited by digging along the shoreline, where it appears collectors believe themselves less subject to discovery. Stepped-up surveillance of these sites, and of the Franklin and Grant County shorelines in general, is needed.

Finally, action should be taken to mitigate stock damage in the parts of the site that are in Franklin County. Stock fences excluding animal access to site areas would be the most expedient way to effect such mitigation.

5.0 THE CURATION PROGRAM: LOCATE COLLECTIONS AND RECORDS FROM AUTHORIZED ARCHAEOLOGICAL INVESTIGATIONS AT THE HANFORD SITE

An important goal set by the HCRMP, following guidelines of the Archaeological Resources Protection Act, is to establish a curation system for artifacts and records pertaining to cultural resources. The first step in the process of planning for artifact and records curation is to ascertain the location of collections, which was the task set for FY 1989.

Much of the necessary information was contained in Rice (1980), but in confirming locations described in that report, HCRL staff found that some materials have been relocated and additional collections have been made since Rice wrote his summary. Results of the curation efforts for FY 1989 are summarized in Table 5.1. Cooperation with HCRL in estimating the volume and types of materials has been requested from and granted by all of the current curators of the collections.

TABLE 5.1. Current Status of Archaeological Collections From the Hanford Site^(a)

Site(s)	Location of Collections	Curator	Coop ^(b)
Ben-Franklin Survey, numerous sites	Mid-Columbia Archaeological Society, Richland, Washington	Kim Simmons, Director	yes
Test Excavated 45BN149, 45GR302a, 45GR306b, 45GR317	Mid-Columbia Archaeological Society, Richland, Washington	Kim Simmons, Director	yes
Test Excavated 45BN157a, Vernita Site	Home of Kenneth DenBeste, Moxee City, Washington	Kenneth DenBeste	yes
Test Excavated 45BN179, 45BN180, 45BN257, 45FR266h	Laboratory of Anthropology, University of Idaho, Moscow, Idaho	Leo Flynn	yes
Test Excavated 45BN307; surveys post-1986	Hanford Cultural Resources Laboratory	Natalie Cadoret	yes

(a) Collections made after federal acquisition of the site in 1943.

(b) Curator has agreed to cooperate with HCRL in assessing curation needs.

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6.0 EVALUATION OF KNOWN CULTURAL RESOURCE SITES FOR ELIGIBILITY TO THE NATIONAL REGISTER OF HISTORIC PLACES

Section 110 of the NHPA and Executive Order 11593 require the DOE to evaluate all cultural resources under its management for their eligibility to the National Register. Evaluation procedures were conducted for three sites during FY 1989. Two of these sites, the Hanford B Reactor and the Gable Mountain/Gable Butte Cultural District (Figure 6.1) are believed to be eligible, and nomination documents have been prepared. These nomination materials have been provided to the DOE-RL, which has submitted them to the Washington State Historic Preservation Officer for comment.

The third site, located in the Wahluke Archaeological District, was nominated to the National Register in the mid-1970s, but the nomination was returned for lack of information. Sites in the proposed district were visited to relocate and assess their condition and determine if their inclusion in a district, was appropriate. Site 45GR302b (Wahluke site), the principal site in the district, was mapped and subsurface tests were conducted to gather data to support statements of scientific significance. Data analysis is not yet complete, but preliminary findings show strong indications of scientific significance for five sites within the Wahluke Archaeological District.

Excerpts from nomination forms for the Hanford B Reactor and Gable Mountain/Gable Butte Cultural District and a description of activities in the Wahluke Archaeological District are presented below.

6.1 HANFORD B REACTOR

National Register nomination documents for the Hanford B Reactor were prepared in April 1989. The Hanford B Reactor is a single-pass, water-cooled, plutonium production reactor that was constructed during World War II as part of the Manhattan Project. Construction of the reactor began in 1943, and the facility produced fissionable material for national defense until its deactivation in 1968. It is situated on a terrace of glacial flood gravels 0.8 km south of the Columbia River and 5.6 km east of Washington State Highway 240 at the Vernita Bridge crossing.

The Hanford B Reactor is housed inside the 105 B reactor containment building in the 100 B/C Area of the Hanford Site. The containment building is surrounded by various support

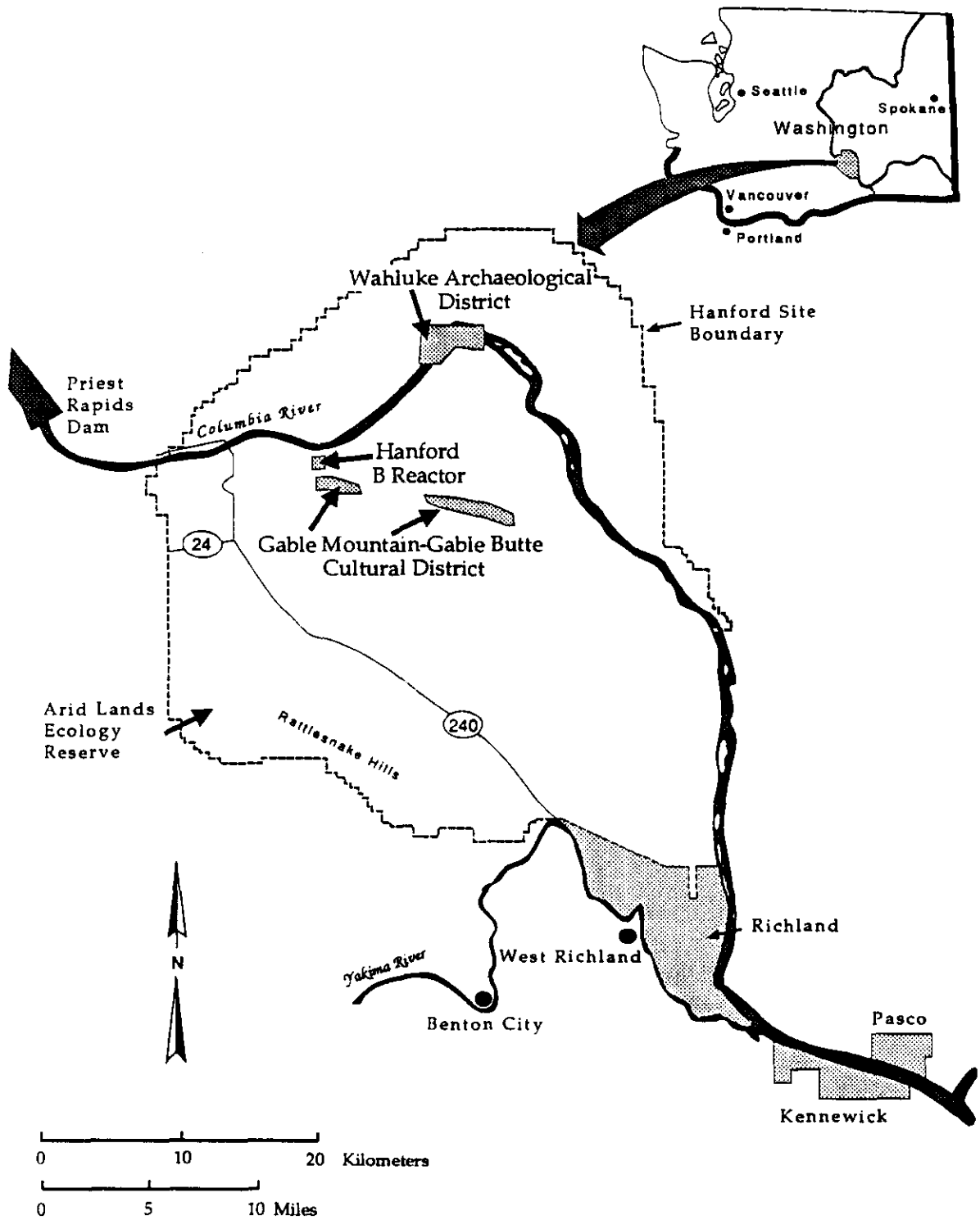


FIGURE 6.1. Locations of Cultural Resources Evaluated in Fiscal Year 1989

structures, which were not included in the nomination and are scheduled for demolition in the near future. The 105 B Building and its contents are intact, with no significant changes made since deactivation in 1968.

The Hanford B Reactor meets criteria for the National Register under criterion (a)[36 CFR 60.4]: having been associated with events that contributed to the broad patterns of history. The Hanford B Reactor contributed to history in three ways: 1) it was the first large-scale reactor to attain full power and hence represents the beginning of the nuclear age, 2) it produced the plutonium that was used in the first nuclear explosion and thus represents the beginning of the era of nuclear weaponry, which has had a profound impact on geopolitical history, and 3) it was a part of the Manhattan Project, which in just 3 years took nuclear weaponry from the realm of theory into practice and ended World War II. The Hanford B Reactor produced the plutonium used in the bomb dropped on Nagasaki, which led to the Japanese surrender. Given these effects on the course of history, it is reasonable to conclude that the impact of the construction and use of the Hanford B Reactor has been as great as any other event in recent history.

6.2 GABLE MOUNTAIN/GABLE BUTTE CULTURAL DISTRICT

The Gable Mountain and Gable Butte are remnant features of an eroded basaltic anticline that extend in three clusters for about 16 km along an east-west axis in the central part of the Hanford Site. They stand out as distinctive promontories of the natural world, ranging in width from 0.4 km to 1.6 km and standing up to 180 m above the floor of the Pasco Basin.

Two themes, religious activity and hunting, are represented by the archaeological remains. Archaeological features include isolated and clustered rock cairns along elevated ridges and knobs (16 sites), with occasional rock alignments, talus pits, and lithic scatters at the base and along the flanks of the Gable Butte (seven sites). Isolated projectile points are common, and represent the Cascade (8000-4500 B.P.) and Harder (2500 B.P.-protohistoric) phases in the local chronology (Leonhardy and Rice 1970).

The natural configuration of rocky ridges, sheltered hollows, isolated knobs, and mesa tops provides a setting that possesses more cultural importance to the native peoples of central Washington and northern Oregon than do the identifiable vestiges of the rock cairns and hunting sites. Gable Mountain in particular plays an important role in their cosmology, and has been the site of religious ceremonies and spirit quest activity within the past 2 years.

Eligibility was supported under two criteria. Under criterion (d), the district contains information important for understanding the history of Plateau Indian religion and hunting practices. Under criterion (a), the site is a traditional use area that played an important part in the Native American history of the Columbia Basin region. It is the latter criterion that highlights the site's significance.

Since Indian people regard Gable Mountain and Gable Butte as sacred sites, the complete landforms are included in the cultural district, not just the distribution of rock cairns or the hunting-related sites. Also, whereas an anthropologist might recognize the rock cairns as significant, only Indian people are likely to know the totality of significant features present in this district. Consultation with Indian religious leaders will aid in the management of the cultural sites within this district.

6.3 WAHLUKE ARCHAEOLOGICAL DISTRICT

The Wahluke Archaeological District was proposed by Rice based on the concept of site complex, which is defined as "geographically associated sites which are of the same general age, which are functionally diversified, and which may have been used concomitantly for different purposes by a single group of people" (Rice 1968a, page 23). The original nomination of this district included 10 sites: 45BN141 through 45BN147 and 45GR306a through 45GR306c. Seven of these sites were revisited in FY 1989, and subsurface tests were conducted at 45BN306b; results of inspections and preliminary results of testing are described below.

6.3.1 Inspection of Sites Listed in the District

Sites 45BN144 through 45BN147 and 45GR306a through 45GR306c were revisited and their existence, age, and scientific potential reconsidered. Before evaluation is complete, sites 45BN141 through 45BN143 will also need to be reviewed. Descriptions of the sites and inspections are discussed in the following text.

45BN144

Rice originally described this as a campsite 100 m long and 30 m wide, containing concentrations of heat-modified rock (FCR), notched sinkers, a hammer stone, and an anvil stone. The site was identified in the fall of 1988 and consisted of very few scattered FCR on a deflated cobble surface adjacent to a remnant of early Holocene alluvium. No sinkers or other tools were observed, and there was nothing to indicate site age.

45BN145

The description of this site is nearly identical to 45BN144 except that artifacts included cobble tools, hopper mortar bases, and corner-notched projectile points. The 1988 visit found less than a dozen FCR, an anvil stone, and three cobble cores loosely scattered along the deflated edge of a 100-m-long remnant of dune-capped alluvium. No cultural material was visible in the remnant itself.

45BN146

Rice (1968a) described this as a group of seven or eight housepits and scattered FCR concentrations on a slight bench downstream of and opposite the Wahluke site. Cobble tools, notched sinkers, a drill, and a pestle were found.

In 1988, the site was easily relocated approximately 100 m upstream of the location illustrated by Rice. It is in a roughly triangular remnant of an older alluvial terrace that has been almost entirely eroded away. Fluvial sand is capped by 30 to 80 cm of eolian sand; artifacts occur at the contact between the two. Artifact deposits consist of 2-to 4-m-diameter concentrations of large (ca 15-cm-diameter), oxidized, occasionally fragmented, granitic FCR associated with cobble cores, anvil stones, and a small amount of cryptocrystalline detritus. FCR outnumber other artifacts by 50:1, whereas flakes and cobble cores are present in equal numbers. Rock concentrations are widely spaced away from the river, but are coalesced near the shoreline. Bone is present, in good condition, and includes remains of ungulates, salmon, and canids. One mussel shell was seen. There is no indication of housepits.

The low diversity of artifacts and low proportion of chipped stone to FCR is indicative of a site where a limited number of activities were performed, possibly associated with salmon fishing and processing. FCR concentrations are reminiscent of those seen at 45GR316, which is attributable to the Frenchman Springs Phase.

45BN147

This site is described as a cluster of housepits on an eroded river bar opposite the Wahluke site. No artifacts were found in association with it during the original survey (Rice 1968a). The HCRL staff easily located the place reported to contain the site, but no evidence of an archaeological site was found. Depressions interpreted as housepits are wind- and water-scoured hollows in a remnant of early or mid-Holocene floodplain.

45GR306a

This site is originally described as a campsite consisting of extensive concentrations of FCR and shell, plus a variety of cobble tools, notched sinkers, pestles, and hopper mortar bases. Much of the site is covered by or lies in dunes. The eastern portion of the site was inspected in June 1989, and the existence of numerous FCR and shell concentrations and hopper mortar bases or anvils was confirmed. Two significant additional observations are the presence of concentrations of large stones on dune surfaces, and the fact that shell primarily is eroded from either deep in dune sand or beneath the dunes. Rock concentrations on dune surfaces are evidence for graves (see discussion of 45BN139 in Section 4.1), which probably mark the cemetery partially excavated by Krieger (1928). Evidence that shells are being eroded or brought up by rodents from within or beneath the dunes represents an earlier occupation of the site than do the graves. Gonidea and Margaritifera are both present in and among the shells, which leads us to conclude that the earlier occupation may belong to the Cascade Phase (Lyman 1980).

6.3.2 Wahluke Site (45GR306b): Reinspection and Test Excavation

Wahluke is reported by Rice (1968a) as a 450-m-long, 150-m-wide campsite containing at least 25 housepits; much of which has been deflated by wind erosion. Excavations were first conducted at the site by Herbert Krieger of the Smithsonian Institute, who reported finding rock-rimmed house pits and numerous graves (Krieger 1928). Artifacts he recovered date primarily to the Cayuse Phase, although there are older artifacts in Smithsonian collections from the site (Rice 1980). In personal conversation, Rice reported to HCRL staff that he and the Mid-Columbia Archaeological Society (MCAS) had excavated test pits in the eastern portion of the site, finding the cultural deposit to be less than 1 m deep and containing no incontrovertible evidence for housepits.

Evaluation work at the Wahluke site during FY 1989 included surface inspection, mapping, systematic auger testing, and test excavation. Work was conducted by faculty and students from Central Washington University, Ellensburg, Washington, under the direction of the HCRL. Analysis of the results of that work is under way and will be completed during the first quarter of FY 1990. Therefore, the following description of activities and findings is preliminary.

Surface Observations

The site extends approximately 400 m along a high, sand-capped gravel terrace on the left bank of the Columbia River near the beginning of the White Bluffs. Its south end is covered by a series of sand dunes and is more properly linked to site 45GR306a, to which it is essentially

identical. At the northern end of the dunes is a deep blowout containing piles of mussel shells and large numbers of FCR, cobble cores, and flakes. The assemblage appears to represent the Cascade Phase.

Immediately east of the blowout (downriver) is a narrow terrace of gravel covered by alluvial and eolian sand. The first 50 m of this terrace is a homestead area, with locust trees and historic trash, that was leveled during the Hanford Site cleanup of the 1970s. Downriver of the homestead is an area approximately 150 m long and 30 m wide of pits and dirt piles left by relic collectors. Pits tend to be less than 1 m deep, a surface skimming of sorts. The disturbances have been eroded by wind and now resemble a mass of tiny dunes and blowouts. Tens of thousands of FCR, cryptocrystalline flakes, and bone fragments are present, along with many hopper mortar bases, cores, flake tools, and other artifacts. Projectile points found on the surface of this area are attributable to the Cayuse Phase. Below this terrace is a gravel flat that was formerly within the flood channel of the Columbia River. Collectors' pits pock mark this area as well.

Downriver of the disturbed area is a slightly higher terrace similar to the first, but showing much less disturbance. It appears to consist of a gravel base, near the elevation of the lower terrace surface, that has been capped by eolian or parafluvial sand to a depth of less than 1 m. Pits and depressions are common and appear to be cellar pits from the homestead era, test pits excavated by the MCAS in the early 1970s, and prehistoric housepits. Shell bits are scattered over the surface near the terrace bank, and FCR, hopper mortar bases, cobble tools, and flakes are common.

Despite extensive evidence of earlier relic collecting, there is little indication that the activity continues today. There were no recently excavated pits, and the presence on the surface of such artifacts as net sinkers and projectile points indicates that surface collecting is not intensive. There is evidence, however, that members of the public make unauthorized visits. Campfires have been built on shell piles in the dune area, and string lines and lashed poles on the locust trees show that modern hunters have butchered game on the site

Subsurface Tests

Seven test pits were excavated in selected areas of the Wahluke site to sample the spatial variability of artifact deposits and investigate specific, apparently cultural features (Table 6.1). In placing the pits, a particular effort was made to avoid areas disturbed by relic collectors. Pits were ordinarily 1 m², except for Test Unit 1/2, which was a 1- by 2-m pit. Pits were excavated in arbitrary 10-cm levels; all excavated material was passed through 6-mm wire cloth screening, and all bone, chipped stone, shell, and tools were saved. FCR was counted, weighed, and discarded in the field. Profiles were drawn of at least one wall of each pit.

TABLE 6.1. Test Pits Excavated at Site 45GR306b: Placement and Findings

Test Unit	Location	Findings
1/2	Sand dune area	Surficial artifacts; pit closed at 1 m because of wall collapse
3	South edge of the homestead area	Historic debris at surface, prehistoric strata of Cayuse Phase to depth of 1.4 m
4	Level undisturbed plot in center of collector-disturbed area	Multiple house/living floors to 2.1 m; bone preservation excellent, including salmon, dog, deer, rabbits; coprolites present; age estimated at last 2500 years; radiocarbon date 1150 ± 110 years B.P.
5	Northeast edge of looted terrace	Dense, organic-rich midden to 50 cm
6	Center of a suspected housepit, upper terrace	Housepit floor at 90 cm, containing well-preserved fishbone, charcoal; radiocarbon date 290 ± 80 years B.P.
7	Outer edge of upper terrace in shell concentration	Early (Cascade Phase?) shell midden at 70 cm
8	East edge of housepit tested in pit 6, placed to determine pit size, profile	Artifacts confined to upper 30 cm; housepit edge not found

Subsurface tests in the dune area of the site produced only surficial FCR and a few flakes and animal bone fragments. In the lower terrace, however, where the homestead and collector-disturbed areas occur, cultural layers were found at varying depths. Test Unit 5 was the shallowest and contained a homogenized organic-rich midden to 50 cm underlain by sterile sand. Test Unit 3, at the opposite end of the terrace, contained three levels of high artifact density, including cryptocrystalline flakes, bone, and projectile points. Projectile points were primarily attributable to the Cayuse Phase, although one specimen from the deepest level may belong to the Frenchman Springs Phase. Animal remains were primarily those of large herbivores, possibly including bison. Test Unit 4 was the most productive test pit. Located in a rectangular undisturbed area that had probably been under a barn, it contained seven superimposed, charcoal-rich layers to a depth of 2.1 m. These layers, which were tentatively interpreted as housepit floors, were separated by layers of wind- or water-deposited sand and contained chipped stone artifacts that indicate occupation during the last 2500 years. Bone was well preserved and included primarily salmon,

along with rabbit, deer, and dog. The dismembered forelimb of a dog was found in the third floor from the bottom, apparently buried beneath a cluster of stones.

Excavation in the upper terrace revealed two components. The younger component, exposed in Test Units 6 and 8, consisted of housepits and a low-density artifact deposit in areas between the housepits. One house floor that was investigated in Test Unit 6 contained charcoal and superbly preserved salmon bone. The high quality of bone preservation is suggestive of recent age, which has been confirmed by a radiocarbon date of 290 ± 80 years B.P. The second component consists of an extensive shell midden at least 10 by 20 m in extent, as indicated by the surface distribution of shell fragments. Shells encountered in Test Unit 7 were in a 10-cm-thick layer between 70 and 90 cm below surface, and consisted of very thick, large specimens of Margaritifera falcata. Specimens were very friable. The size, thickness, and condition of the shells are evidence for great age, perhaps in the range of 4000 to 6000 years B.P.

Samples of charcoal from four floors in Test Unit 4, the lowest artifact concentration in Test Unit 3, the house floor in Test Unit 6, and the shell layer in Test Unit 7 have been submitted for dating to Beta Analytic, Inc. of Coral Gables, Florida. Preliminary results from two samples are shown in Table 6.1.

6.3.3 Preliminary Evaluation

The Wahluke Archaeological District contains 10 identified sites. The centerpiece of the district, site 45GR306b, despite having been severely looted by relic collectors, contains extensive, undisturbed archaeological components of at least two and possibly three archaeological phases. site 45GR3066 contains housepits that are as young as a few hundred years to as old as 2000 years or more; the housepits contain an abundance of well-preserved animal remains and charred-plant material. The deepest housepit investigated even contained numerous coprolites, which, if human, are among the best sources of dietary information available. There is potential in the site for scientific data relating to population sizes, domestic activity, adaptive strategies, and subsistence, to name a few. Older components may have similar potentials.

Site 45GR306c does not appear to be a cemetery, as do the upper components of site 45BN306a. The latter site also contains a deeply buried component of what may be the Frenchman Springs or Cascade Phase.

Site 45BN146 appears to be a site of special activity dating to the Frenchman Springs Phase (or perhaps later). The site's good faunal preservation and large undisturbed areas could provide scientific data on the activity represented. Test excavation is needed at this site to establish its age and to clarify its function.

Site 45BN147 is not an archaeological site, and 45BN144 and 45BN145 are apparently deflated (and perhaps surface collected) to the point of having lost their scientific value. Although site 45BN145 may date to the Cayuse Phase, 45BN144 cannot be dated. Sites 45BN141, 45BN142, and 45BN143 remain to be evaluated.

Based on these findings, the Wahluke Archaeological District, as originally conceived, does not fit the definition of a site complex. It consists of sites containing components of various ages and is not, as originally thought, a group of Cayuse Phase occupations of differing functions. Its composition should be reevaluated. At the very least, sites 45GR306c, 45BN147, 45BN145, and 45BN144 should be omitted.

7.0 THE PUBLIC EDUCATION PROGRAM

This activity, planned in the first quarter of FY 1989, consists of three parts targeting elementary and middle school students, secondary school students, and the general public. The elementary/middle school effort is directed at 4th and 8th grades, as part of their Washington State history curriculum, and will emphasize Indian cultures, archaeological interpretations, and conservation. The secondary school effort will be part of the DOE Sharing Science with Schools program and will emphasize scientific values of cultural resources and preservation problems. The work directed at the general public includes public relations efforts to inform people about cultural resources management at Hanford, including news releases, as appropriate, and a brochure prepared by the Office of Hanford Environment; public lectures on cultural resources management at Hanford and on regional prehistory; and various activities related to Native American awareness.

Implementation of this plan was begun in FY 1989 (it began much earlier on an informal basis). During this fiscal year, HCRL staff spoke to one high school class and are scheduled to take part in Sharing Science with Schools beginning in fall 1989. Curriculum coordinators at Pasco, Richland, and Kennewick school districts were contacted to arrange meetings with social studies teachers to discuss how best to present material to primary students, but meetings were never finalized. A different strategy will be used in the future. On the general public front, a brochure is being prepared on cultural resources management at Hanford by PNL's Public Relations staff in collaboration with the HCRL. Lectures have been presented to five public groups (the Atomic City Kiwanis, the Lakeside Gem and Mineral Club, the Northwest Section of the Society for Range Management, the Northwest Science Association, and the Richland Friends of the Library), and the HCRL assisted the DOE-RL with its Native American Awareness Week (September 18-22, 1989).

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8.0 SECTION 110 SURVEYS

Section 110 of the NHPA specifies that federal agencies must identify all historic properties on lands under their administration. Because this has rarely been practicable, given the scale of federal holdings, the Advisory Council for Historic Preservation has added to its list of acceptable identification procedures the process of predictive modeling. A predictive model estimates the number and distribution of different types of cultural resources based either on a theoretical conception of human behavior (deductive model) or a knowledge of the distribution of cultural resources on a statistically selected sample of the agency's lands (see Chatters 1989; Section 3.1.1).

The DOE-RL is already using a simple predictive model to conduct cultural resource reviews of lands that have been classified as either low or high sensitivity, depending on their geographic setting and the likelihood that cultural resources occur in that setting. The classification is based on ethnohistorical information and on the results of archaeological reconnaissance and survey efforts previously conducted on the Hanford Site and the nearby, ecologically similar Pasco Basin. Although this model is currently in use, it has not yet been validated.

The HCRMP specifies that predictive model validation and refinement will include a 10% survey of site lands, an analysis of the cultural properties found during that survey in temporal, functional, and distributional terms, and an extrapolation from these data of the number and distribution of different kinds of cultural resources throughout the area. This work is to be conducted over a period of 6 years, of which FY 1989 was the first.

A stratified random sampling strategy has been used to select 10% (143 km²) of Hanford Site lands for survey. The study area was first divided into parts (environmental zones) that were assumed or demonstrated to be internally homogeneous for environmental characteristics pertinent to human use. The characteristics considered in stratifying the area were topography, surface hydrology, soils, and known distributions of archaeological resources. Once the environments had been defined, the entire site was divided into sample units of 16 ha, which were then numbered and sampled randomly for each environmental zone.

Only 16 plots were surveyed in FY 1989 (see Figure 8.1 and Appendix C), amounting to 1 m² of area, or 0.2% of the entire Hanford Site. This is an insufficient area from which to draw conclusions, but some preliminary observations are warranted. Seven plots were located in the stable dune environmental zone, which is generally low lying and flat. These plots contained one

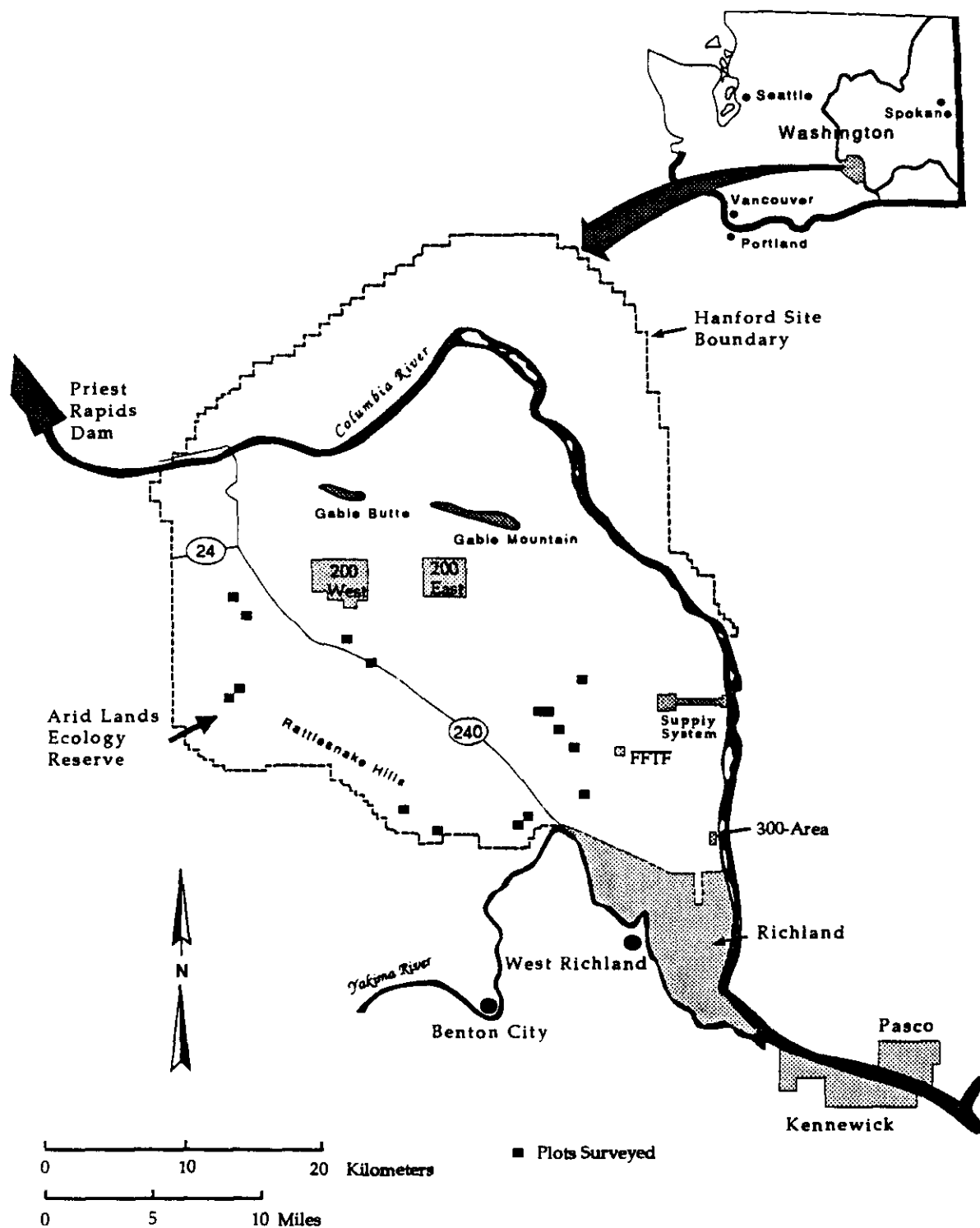


FIGURE 8.1. Locations of Sample Plots Surveyed for Section 110 Compliance

flake of cryptocrystalline silica. Plots located in other environmental zones, particularly on the slopes of Rattlesnake Mountain, contained a variety of prehistoric sites, and isolates any trash left by late nineteenth- or early twentieth-century Euroamerican occupants.

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APPENDIX A

SECTION 106 REVIEWS CONDUCTED
AT THE HANFORD SITE IN FY 1989

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APPENDIX A

SECTION 106 REVIEWS CONDUCTED AT THE HANFORD SITE IN FY 1989

This appendix presents a complete listing of Section 106 cultural resource reviews requested of the HCRL by Hanford Site contractors and the DOE-RL during FY 1989 (Table A.1). It then provides descriptions of those Class V reviews which were completed during the fiscal year (Section A.2). These reviews do not include cases 88-600-011, 89-200-023, 89-200-025, 89-300-019, 89-300-023, or 89-600-010, which were not yet completed at the time this report was written.

A.1 SECTION 106 REVIEWS REQUESTED DURING FY 1989

A complete listing of Section 106 reviews requested by Hanford Site contractors or the DOE-RL between October 1, 1988, and September 1, 1989, is presented in Table A.1.

TABLE A.1. FY 1989 Cultural Resource Reviews

Case #	Classification	Project Name	Monitoring Required?	Cultural Resources?	Significant?
A.2	III	117-C Exhaust Filter Building Demolition	No	No	National Register Properties
	III	105-F Fuel Basin Storage Monitoring Well	No	No	
	III	115-B/C Gas Recirc. Fclty and Tunnel Demo.	No	No	
	III	116-B Crib Remediation Demonstration Project	No	No	
	I	100-N Fire Hydrant Replacement	No	No	
	I	183-H Fire Supply Line Repair	No	No	
	I	105-F Fire Supply Line Repair	No	No	
	I	183-C Fire Hydrant Removal	No	No	
	I	183-B Fire Hydrant Repair	No	No	
	V	1324N/NA Surface Impoundment	No	No	
	III	Groundwater Monitoring Well Tanks	No	No	
	III	Integrated Voice and Data Telecom. System	No	No	
	I	100-N Fire Main Repair	No	No	
	III	100-KE & 100-D UST Removal	No	No	
	I	183-B Fireline Repair	No	No	
	I	100-B Fire Hydrant #19 Repair	No	No	
	III	100-K 1908 Outfall Line	No	No	No
	III	Hanford Switching Substation Microwave Tower	No	No	
	III	Hanford Infrastructure UST	No	No	
	NA	100 HR-1 CERCLA Overview	NA	No	
	NA	100 HR-3 CERCLA Overview	NA	Yes	No
	NA	100-DR-1 CERCLA Overview	NA	No	
	III	UO3 Double Wide Excavation	No	No	
	III	Liner Leachate System Test	No	No	
	III	272 E Jib Crane	No	No	No
	III	Environmental Hot Cell Expansion	No	No	
	I	609A Water Leak Repair	No	No	
	III	Grout Treatment Multipurpose Facility	No	No	
	V	Surface Environmental Monitoring	No	2 Isolates	No
	III	A24 Crib Postholes	No	No	
	I,III	S Plant Mobile Office Facilities Service Instal.	No	No	
	I	AR Vault Second Filter System	No	No	
	III	242-A Evaporator/Crystalizer Upgrade	No	No	No
	III	W-020 Cathodic Protection Upgrade	No	No	
	III	204-S Contamination Cleanup	No	No	

TABLE A.1. (contd)

Case #	Classification	Project Name	Monitoring Required?	Cultural Resources?	Significant?
89-200-002	VI	2704-E Facility Demolition	No	No	
89-200-003	III	W-017 Groundwater Monitoring Wells	No	No	
89-200-004	III	Asbestos Cleanup by 2715 EC and 2707 E	No	No	
89-200-005	III	Special Naval Disposal Trench Expansion	No	No	
89-200-006	III,V	218-W-2A and 216-T-18 Cleanup	No	No	
89-200-007	III	Hexone Remediation Demonstration	No	No	
89-200-008	III	Low-Level Burial Grounds Permit Application	No	No	
89-200-009	III	C-049, Caustic Storage Modification	No	No	
89-200-010	V	Interim Stabilization 216-S-5 and 216-S-6 Cribs	No	Isolate	No
89-200-011	III	272 Double-Wide Installation	No	No	
89-200-012	III	2721 EA Double-Wide	No	No	
89-200-013	III	T Plant PAX	No	No	
89-200-014	III	T Plant Railroad Cut Asphalt Removal	No	No	
89-200-015	III	284E Triple-Wide Mobile Office Facility	No	No	
89-200-016	III	W-086, 217 CR Compressor Upgrade	No	No	
89-200-017	III	2713-W-25 Site Geotechnical Investigation	No	No	
89-200-018	III	MO-351 Trailer Installation	No	No	
89-200-109	III	B-691 Laundry Facilities HVAL Upgrade	No	No	
89-200-020	III	216-Z-4/6/10/17 Stabilization	No	No	
89-200-021	III	T Plant Tunnel Cleanup	No	No	
89-200-022	III	241-C and 241-T Tank Farm GMW Installations	No	No	
89-200-023	V	200 Area Treated Effluent Disposal Facility	?	Not surveyed yet	
89-200-024	NA	200-BP-1 CERCLA Overview	No	No	
89-200-025	V	W-017 Groundwater Mon. Wells-Modular Tanks	?	Not surveyed yet	
88-300-035	IV	399-1-16D Well Abandonment	Yes	No	
88-300-036	III	Fiber Optic Cable Installation	No	No	
88-300-037	IV	B-524 Electrical Distribution, Phase I	Yes	No	
88-300-038	I	382 Bld Steamline Repair	No	No	
88-300-039	I	Crossbuck Post Replacement	No	No	
88-300-040	V	618-2, 618-3 Burial Ground Stabilization	Yes	Historic Site, Isolate	No
88-300-041	I	Sewer line Repair, 326-TR-2	No	No	
89-300-001	II	Fire Hydrant FH-49 Repair	No	No	
89-300-002	III	Piping Main Water Supply Modification	No	No	
89-300-003	I	366 Steamline Repair	No	No	
89-300-004	III	French Drain/Storm Sewer Line	No	No	

TABLE A.1. (contd)

Case #	Classification	Project Name	Monitoring Required?	Cultural Resources?	Significant?
A.4	III	300 Fiber North Project	No	No	
	IV	326 Boiler Installation	No	No	
	III	3763TR1/3764 Bldg PVC Conduit	No	No	
	III	Decommissioning of 311 Methanol Facility	No	No	
	III	D-394, Hazardous Waste Treatment Facility	No	No	
	III	D-388, ES&H Improvements, 326 Building	No	No	
	IV	Tissue Depository, 331 Bldg	Yes	No	
	I,III	306E Double-Wide Installation	No	No	
	III	350 Sandblast Area Fence	No	No	
	VI	3707-S Bldg Demolition	No	No	
	III	FMIT Trailer 9 and 10 Modifications	No	No	
	III, VI	Tritium Driver Fabrication Facilities Mod.	Yes	No	
	I	Fire Water Supply S-306-2 and 3 Repair	No	No	
	III,IV	L-046, 300 Area Emergency Electrical System	Yes	No	
	V	300 Area Treated Effluent Disposal Facility	Yes	Site	Potential
	IV	315 Building Fence Installation	Yes	No	
	NA	300-FF-1 CERCLA Overview	NA	Sites	Eligible for National Register
	NA	300-FF-5 CERCLA Overview	NA	Sites	Eligible for National Register
	V	MSRC	No	Historic Isolates	No
	III	400 Area Security Barrier Modifications	No	No	
	V	Saddle Mountain Water Improvement	?	6 Sites; 5 Isolates	Potential
	III,V	FMCS Extension to ALE	No	No	
	V	Hanford Solid Waste Landfill Lysimeter	No	Site	Potential
	IV	Gable Mountain Security Gate	No	No	
	III	Gas Bottle Storage, 6652 H Bldg	No	No	
	V	Groundwater Detection, Hanford Site Boundary	No	No	
	III	615 Bldg Pole Anchor	No	No	
	V	400 Area Sewage Treatment System Upgrades	No	No	
	III	622-R Bldg and Gravel Pit UST Removal	No	No	
	V,III	In-situ Vittrification Fenced Area	No	No	
	V	Project L-006 Road Upgrade	No	No	
	IV	712 Building Electrical Service Upgrade	Yes	No	
	I	747 Bldg Excavation	No	No	

TABLE A.1. (contd)

Case #	Classification	Project Name	Monitoring Required?	Cultural Resources?	Significant?
89-700-001	IV	703 Bldg UST Removal	No	No	
89-1100-001	V	1100 EM-1 Remedial Investigations Feasibility	No	Historic road, canal	No
89-1100-002	III,V	CERCLA Groundwater Monitoring Wells	No	Isolates	No
89-3000-001	III	KEH UST Removal	No	No	

A.2 CLASS V SECTION 106 REVIEWS

The Class V Section 106 reviews conducted by the HCRL during FY 1989 are described in numerical order in the following text. For each case, descriptions are provided for the project, the surveyed area, techniques used in the survey, and survey findings. A map of the survey area is also provided.

HCRC #89-100-005

**THE 1324-N/NA SURFACE IMPOUNDMENT/ PERCOLATION POND SOIL
CHARACTERIZATION**

Requester: Y. Sada
Environmental Engineering Group
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: The proposed project will involve sampling of the existing 1324-N/NA Ponds in the 100 N Area of the Hanford Site (Figure A.1) and excavation of a new trench that will be sampled to obtain background measurements. The 1324 N Pond will be sampled at eight randomly selected locations, which will be excavated to a depth of 0.9 m. The new trench will measure approximately 9 m long, 3 m deep, and will have a 1.5-m bottom width. Soil samples taken randomly from the bottom area of the trench will be to a depth of 0.3 m.

N. A. Cadoret conducted the onsite inspection of the proposed trench on March 2, 1989. The trench will be located to the east of the 155 N Facility and to the west of a gravel road in an area measuring approximately 30 m east-west by 80 m north-south. This area was surveyed for cultural properties in transects spaced 20 m apart. Vegetation onsite included cheatgrass, Sandberg's bluegrass, green rabbitbrush, knapweed, and yarrow.

Cultural Resources: No cultural resources were observed. The sediments onsite are Pleistocene river gravels with finer sediments interstitial. There is a very low potential for buried cultural properties in this setting.

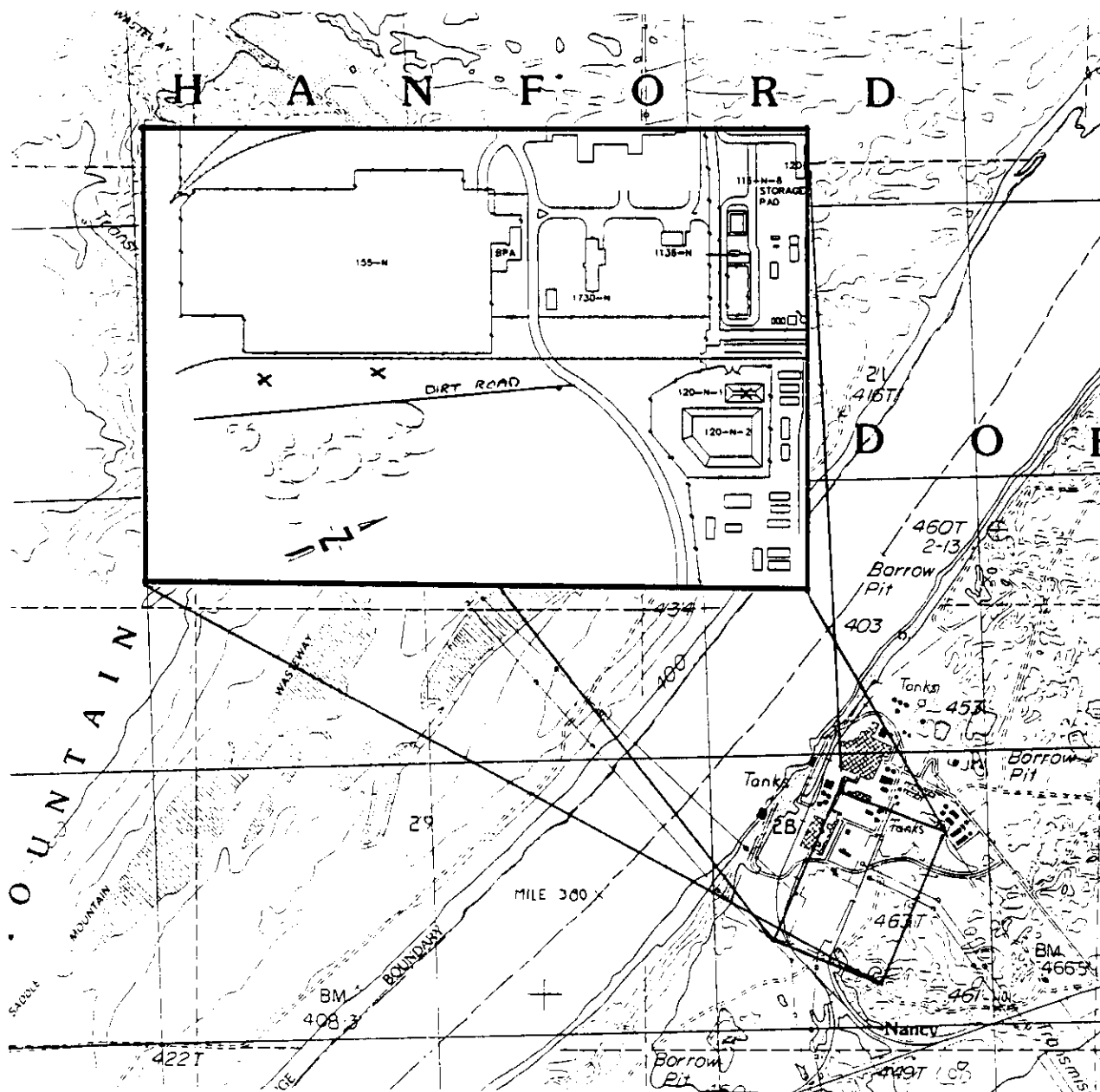


FIGURE A.1. Location of the 1324-N/NA Surface Impoundment/Percolation Pond Soil Characterization, HCRC #89-100-005, on a Portion of the USGS Coyote Rapids Quadrangle, T 14 N, R 26 E (scale is 1:24,000, 1986 Provisional Edition)

HCRC #89-200-010

THE INTERIM STABILIZATION OF THE 216-S-5 AND 216-S-6 CRIBS

Requester: W. M. Hayward
Decommissioning Engineering
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: The project will involve borrowing dirt from undisturbed ground to the west of an existing borrow area for use in covering the 216-S-5 and 216-S-6 cribs (see Figure A.2). A review of an area with the following coordinates was requested: W76300 to W78100 (216-U-9 backfilled ditch), N32400 to N35300.

Our literature and records review showed that no archaeological or native American cultural properties are known to be located onsite. Because the proposed borrow area is undisturbed, a pedestrian survey was necessary as part of the review. K. A. Hoover and N. A. Cadoret conducted the onsite survey on April 24, 1989. The area to the north of the dirt road (see Figure A.2) was searched for cultural properties in transects 20 m apart. The area to the south of the dirt road is largely disturbed by previous activities. For this reason and for safety concerns, no pedestrian survey of this area was conducted.

Cultural Resources: One historic isolated artifact, an extract bottle (#HI-89-002), was identified in the proposed borrow area. The bottle was collected. No other cultural properties were identified.

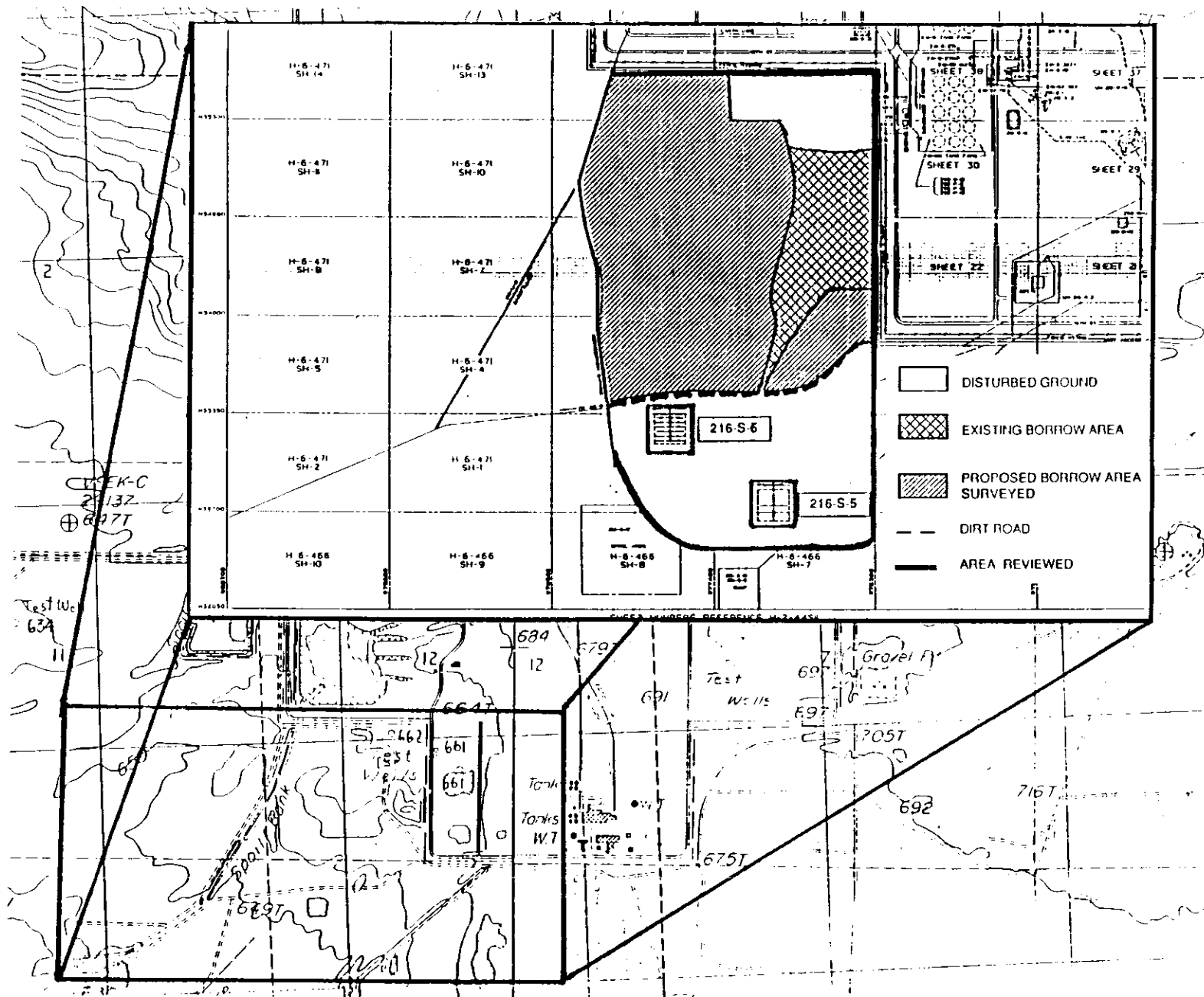


FIGURE A.2. Location of the Proposed Borrow Area for the Interim Stabilization of the 216-S-5 and 216-S-Cribs, HCRC #89-200-010, on a Portion of the USGS Riverland and Gable Butte Quadrangles, T 12 and 13 N, R 25 and 26 E (scale is 1:24,000, 1986 Provisional Edition)

HCRC #88-300-032

618-5 BURIAL GROUND FENCE UPGRADE

Requester: D. S. Kelly
Defense Waste Management Projects
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: This project installed a new chain link fence around the southeast side and the northeast end of the 618-5 burial ground, which is located immediately north of the 300 Area of the Hanford Site, Washington (Figure A.3). The new fence enclosed strips of land adjacent to an existing fence around the burial ground. The newly enclosed area extended 13.6 m to the southeast and 37.4 m to the northeast of the existing fence. The fence along the southeast side was extended toward the southwest until it intercepted the fence enclosing the process sewer trench. The total, newly enclosed area was approximately 7143 m². The fence installation required excavation to a maximum of 1.4 m of approximately 92 post holes with maximum diameters of 0.4 m.

On September 6, 1988, before the fence installation, a pedestrian survey of the project area was conducted by M. K. Jackson of the HCRL. Because of the project's proximity to several recorded archaeological sites, the excavation of the fence post holes was monitored by M. K. Jackson on September 21 and 22.

Cultural Resources: No prehistoric or historic cultural materials were encountered during the field inspection or were noted during monitoring.

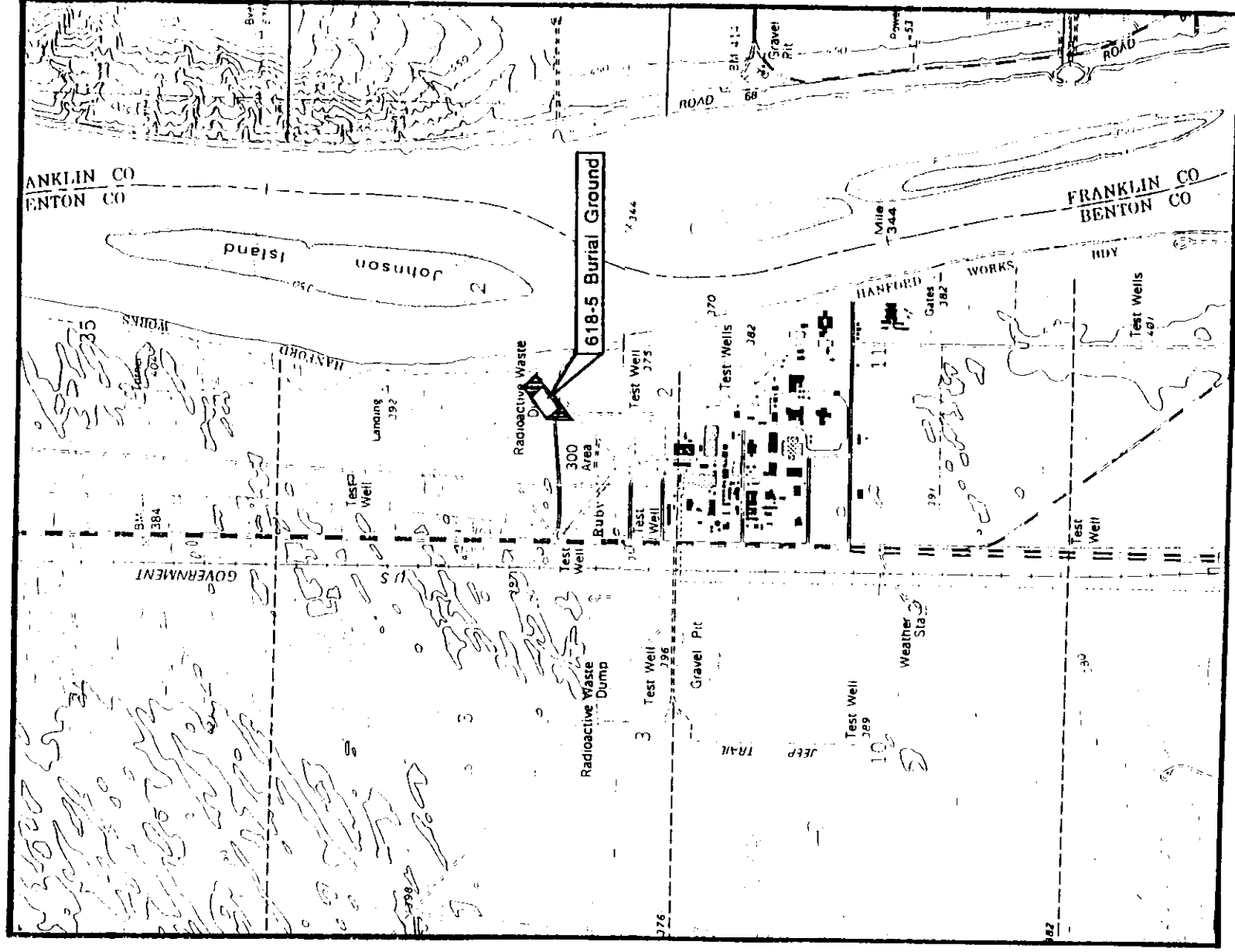


FIGURE A.3. Map Showing Area Surveyed for 618-5 Burial Ground Upgrade, USGS Richland and Wooded Island 7.5-Minute Quadrangles, 1978 (scale is 1:24,000)

HCRC #88-300-040

THE 618-2 AND 618-3 BURIAL GROUND STABILIZATION BORROW AREA

Requester: W. M. Hayward
Decommissioning Engineering
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: An area to the north of the 300 Area of the Hanford Site (Figure A.4) was proposed for use as a borrow area for the 618-2 and 618-3 burial ground stabilization. An area measuring 380 m east/west by 180 m north/south was surveyed at 20-m intervals on January 16, 1989.

Cultural Resources: One historic site, a late nineteenth to early twentieth century domestic trash scatter, assigned temporary site number HT-89-001, and one prehistoric isolated artifact, #HI-89-001, were identified within the proposed borrow area. The isolated artifact, an unmodified cryptocrystalline flake, was collected. The site was staked off and was not disturbed during the borrowing activities.

Our literature and records review showed that the borrow area was about 305 m from the closest recorded archaeological site, 45BN163. Because of the proposed borrow area's proximity to the Columbia River and to 45BN163, the area was monitored by an archaeologist during excavation for possible buried cultural properties.

N. A. Cadoret monitored the borrowing activities on February 13 through March 6, 1989. The borrowing was accomplished with belly loaders. The belly loaders removed dirt in swathes about 3 m wide by about 0.3 to 1.0 m deep. After each pass the newly exposed dirt was examined for cultural remains. One feature, a charcoal stained area, was observed. The feature was irregularly shaped, approximately 75 cm in diameter, basin shaped in profile, and approximately 16 cm deep. Four cm of ash at the surface was underlain by charcoal-blackened sand. The woods in the charcoal were bitterbrush and sage. No artifacts or stones were associated with the feature. The feature may have represented an historic firepit or the remnant of a natural burn. One possible FCR was found near the western edge of the borrow area. No other cultural remains were observed during the monitoring.

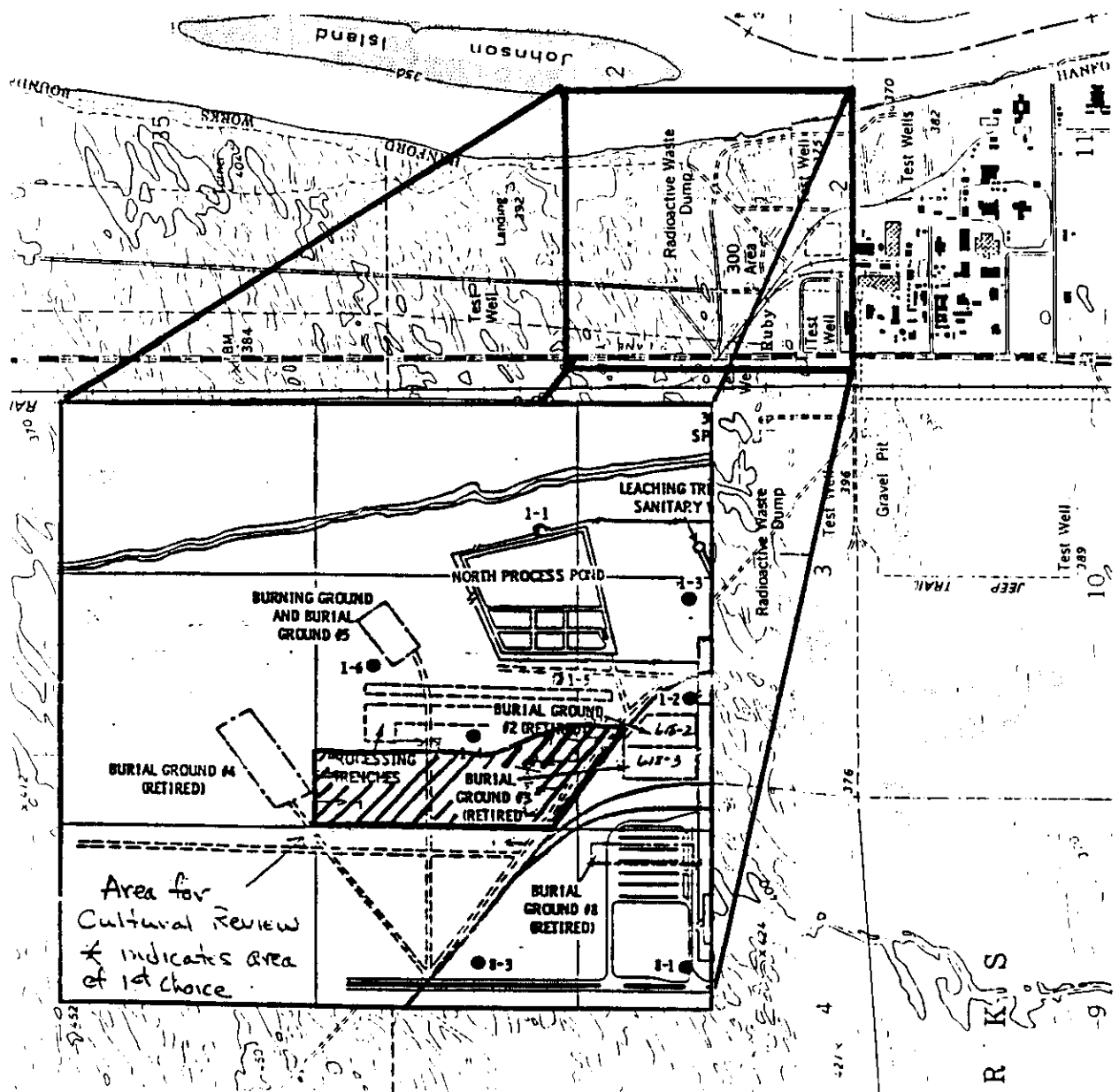


FIGURE A.4. Location of the 618-2 and 618-3 Burial Ground Stabilization Borrow Area, HCRC #88-300-040, on a Portion of the USGS Richland and Wooded Island Quadrangles, T 10 and 11 N, R 28 E (scale is 1:24,000, 1978 editions)

HCRC #88-600-001

**THE BARRIER DEVELOPMENT PROGRAM FINE SOIL BORROW PIT AT
MCGEE RANCH**

Requester: N. R. Wing, T7-25
Geotechnical Engineering Unit
Waste Management Systems Engineering
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: Staff of the HCRL conducted a cultural resources review of the proposed fine soil borrow pit at McGee Ranch (see Figure A.5). Most of the proposed borrow area is within old fields. During the survey of the proposed borrow pit conducted between June 7, 1988, and May 4, 1989, a number of historic cultural remains were observed. These include several irrigation systems, old fence lines and roads, farm implements, trash scatters, and ordnance. The historic and recent remains represent several occupations of the site, late nineteenth to early twentieth century through the 1970s.

No prehistoric remains were identified within the perimeters of the old fields; however, prehistoric artifacts were identified in the surrounding area at some distance from any of the plowed fields. These appeared to represent a surficial deposit. It is, therefore, unlikely that undetected undisturbed prehistoric remains exist in the plowed fields.

We do not, at this point, consider the historic remains to be eligible for inclusion in the National Register because of lack of integrity and the abundance of such remains throughout eastern Washington (e.g., Chatters, J. C. 1980. The Cultural Resources of the Columbia Basin Project. University of Washington, Office of Public Archaeology, Reconnaissance Report 32, Seattle, Washington). It is possible, although unlikely, that the Washington State Historic Preservation Officer will argue otherwise. If he fails to concur with our assessment, the worst case would require us to mitigate impacts to the irrigation features, which would entail careful description and collection of samples of wooden irrigation lines.

Because dense cheatgrass cover made it impossible to obtain a thorough look at the surface of old fields, we would like to monitor for possible buried prehistoric and historic materials when the surface is being exposed. Because the sediments being borrowed are Touchet beds, which often contain large mammal fossils, we will periodically monitor the excavation pits as borrowing progresses.

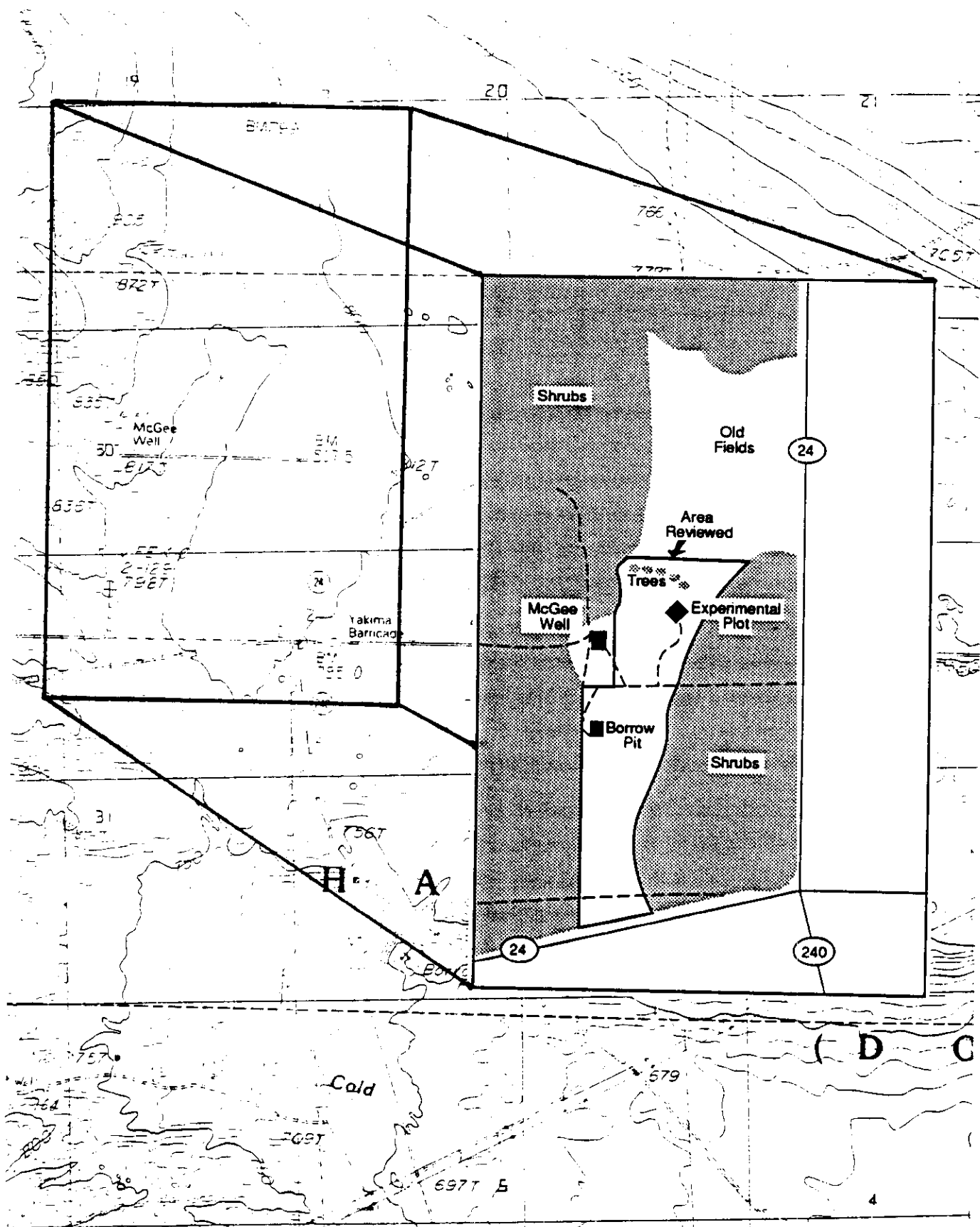


FIGURE A.5. Location of Area Reviewed for the Barrier Development Program Fine Soil Borrow Pit at McGee Ranch, HCRC #88-600-001, on a Portion of the USGS Riverland Quadrangle, T 13 N, R 25 E (scale is 1:24,000 1986 Provisional Edition)

HCRC #89-600-001

CULTURAL RESOURCES REVIEW OF THE FMCS EXTENSION TO ALE

Requester: D. R. Brawn
Pacific Northwest Laboratory
Richland, Washington 99352

Project Description: The Facilities Management Control System (FMCS) extension on the Arid Land Ecology (ALE) Reserve will extend the system to include buildings 6652K, 6652PH, 6652I, 6652J, and 6652H at the ALE headquarters (see Figure A.6). Conduit runs are needed between the buildings to install the necessary signal cable. The approximately 122 m of trenches will be between 20 and 30 cm wide. Maximum depth of excavation will be 46 cm.

Our literature and records review showed that no cultural properties are known to be located onsite or in the vicinity. P. E. Minthorn and N. A. Cadoret visited the project site on July 12, 1989. The ground between buildings 6652-PH and 6652-H is a gravelled parking area. The ground between buildings 6652-PH and 6652-K is also largely disturbed. Imported cobbles cover part of the surface. Russian thistle, knapweed, and other vegetation forms a thick cover on the disturbed ground. Undisturbed ground to 20 m to the east of the proposed line was also examined for cultural properties.

Cultural Resources: No cultural resources were observed.

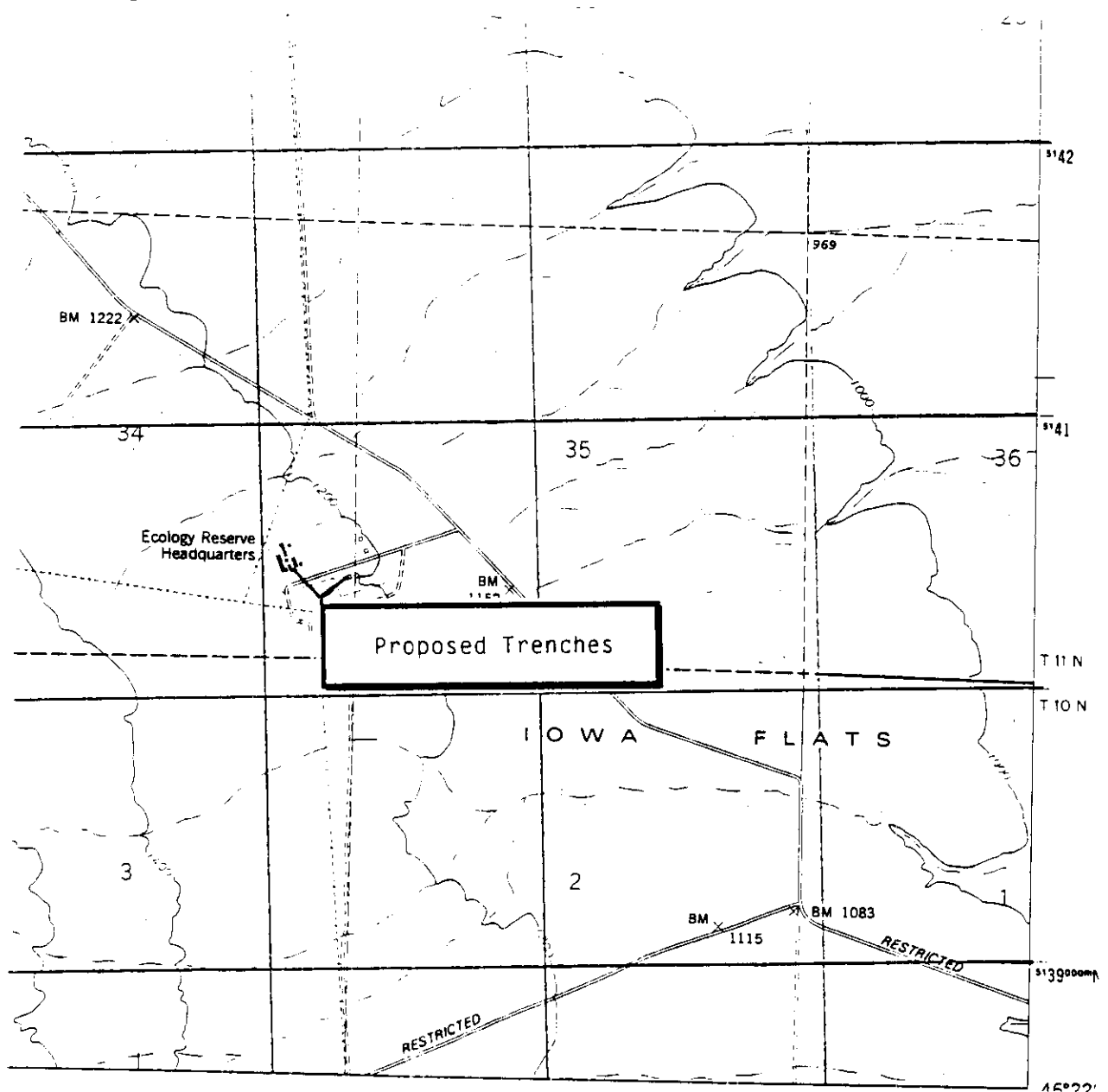


FIGURE A.6. Location of the Proposed FMCS Extension to ALE, HCRC #89-600-001, on a Portion of the USGS Iowa Flats Quadrangle, T 11 N, R 26 E (scale is 1:24,000, 1974 Edition)

HCRC #89-600-002

THE HANFORD SOLID WASTE LANDFILL LYSIMETER

Requester: C. D. Wittreich
Regulatory Permitting, Environmental Division
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: Westinghouse Hanford Company plans to install lysimeters at the Hanford Solid Waste Landfill (SWL) in the 600 Area of the Hanford Site (Figure A.7). Several lysimeters will be placed within the fenced SWL, and one background lysimeter will be placed within a 152-m (500-ft) zone outside the fenced SWL. The approximate dimensions of each lysimeter will be 3 m by 9 m by a maximum of 9 m deep.

An intensive pedestrian survey was required in the 152-m (500-ft) zone outside of the SWL as part of the cultural resources review, while a pedestrian survey was not required within the SWL fence. Most of the ground within the SWL fence has been extensively disturbed by previous activities, and that portion of the SWL not extensively disturbed was surveyed by the HCRL in 1987.^(a) No cultural resources were identified during that survey. Most of the ground in the 152-m (500-ft) zone is undisturbed.

N. A. Cadoret conducted the pedestrian survey of the 152-m (500-ft) zone on March 28, March 30, and April 3, 1989. A total of approximately 0.5 km² of land was surveyed. The topography is stable to semi-active dunes with areas which contain numerous wind-polished river and flood gravels.

Cultural Resources: Several milk cans and one prehistoric archaeological site (temporary site # HT-89-002) were identified within the 152-m (500-ft) zone. The site, a sparse lithic concentration, was located in a blowout between low-amplitude dune crests. A variety of colors of cryptocrystalline is represented at the site. Most flakes are bifacial thinning flakes, and most have been broken. Some have been utilized. The site measures about 50 m north-northeast by 90 m north-north west. Sediments onsite are poorly sorted, silty, very fine to coarse sand with about a 10-20%

(a) Letter report dated January 1988 by K. A. Hoover and J. C. Chatters. Cultural Resource Survey of the Solid Waste Landfill Site: Proposed Future Utilization Plots, HCRC #87-600-006.

pebble/ cobble lag (up to 50% lag in a few areas). Several boulders are onsite. The closest permanent water appears to be the Columbia River, 10.6 km to the northeast. No diagnostic artifacts were observed. The construction of the lysimeter within the SWL should not impact this site.

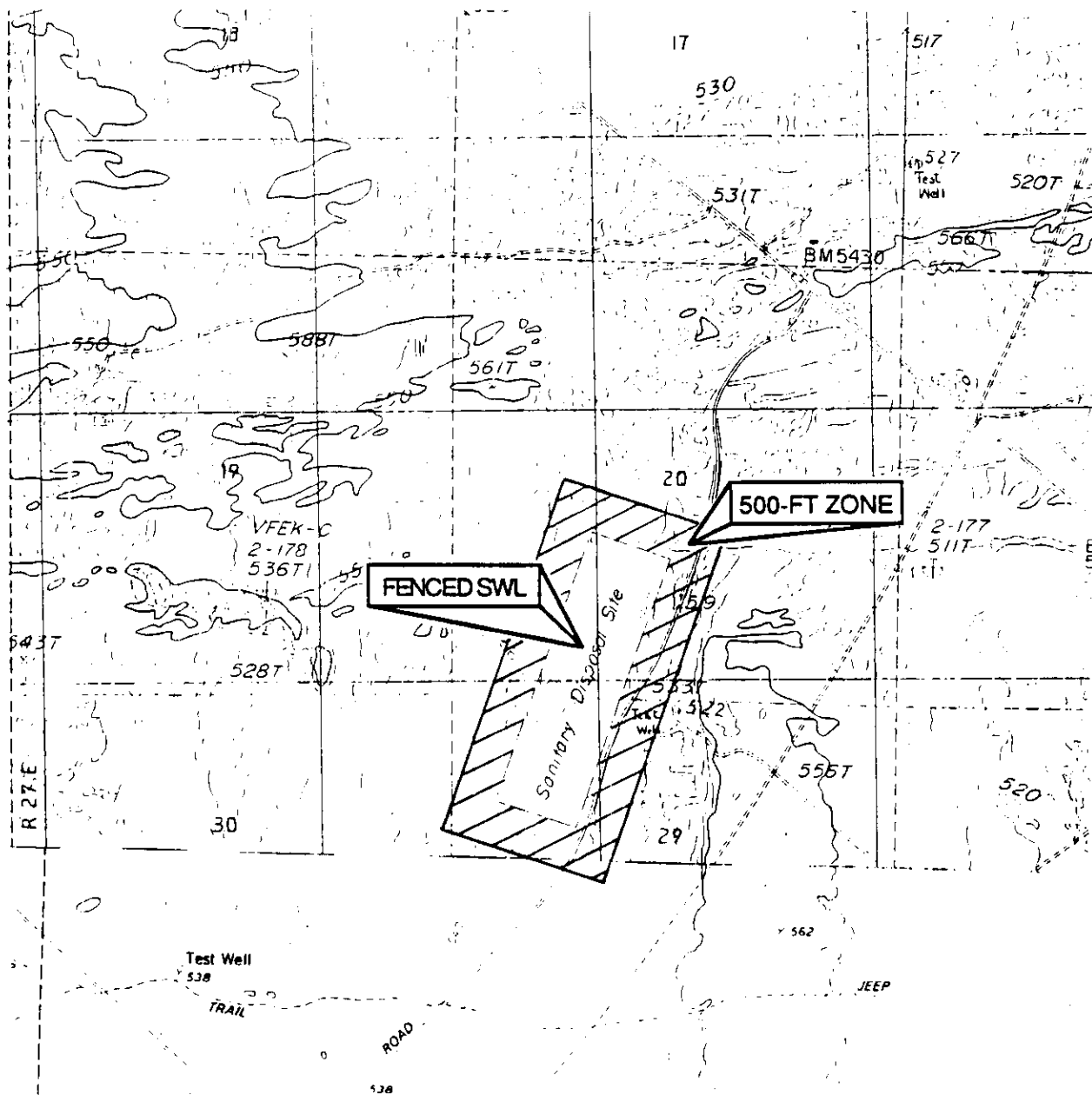


FIGURE A.7. Location of the Hanford Solid Waste Landfill and the 500-ft Zone Surveyed HCRC #89-600-002, on a Portion of the USGS Horn Rapids Dam and Hanford Quadrangles, T #12 N, R 27 E (scale is 1:24,000, 1977 Edition and 1986 Provisional Edition)

HCRC #89-600-005

THE GROUNDWATER BOREHOLES AT THE HANFORD SITE BOUNDARY

Requester: T. J. Gilmore
Pacific Northwest Laboratory
Richland, Washington 99352

Project Description: The project will drill two boreholes on the Wahluke State Wildlife Recreation Area, across the Columbia River from the Old Hanford Townsite (see Figure A.8), and one well in the 600 Area of the Hanford Site, adjacent to existing well 42-2. An area approximately 30 m around the boreholes may be impacted by the project. The 30-cm wells will be drilled to a depth of approximately 152 m.

N. A. Cadoret conducted an intensive pedestrian survey of the project areas on May 9 and August 14, 1989, using a transect interval of 20 m. The project site on the Wahluke State Wildlife Recreation Area is in the northwest corner of a recently tilled field with furrows running north/south. The ground is essentially flat, and the sediment is mostly silt. Vegetation is predominantly Salsola kali and Bromus tectorum, and the groundcover is approximately 20%. The project site near well 42-2 is in an area of semi-active dunes. Vegetation onsite included Sandberg's bluegrass, cheatgrass, Russian thistle, ragweed, balsamroot, snow buckwheat, and scurf pea.

Cultural Resources: One crimped can and a tangle of barbed wire were noted in the project area on the Wahluke State Wildlife Recreation Area. Neither of these cultural properties are considered significant. A modern coke bottle was observed at the project site near well 42-2.

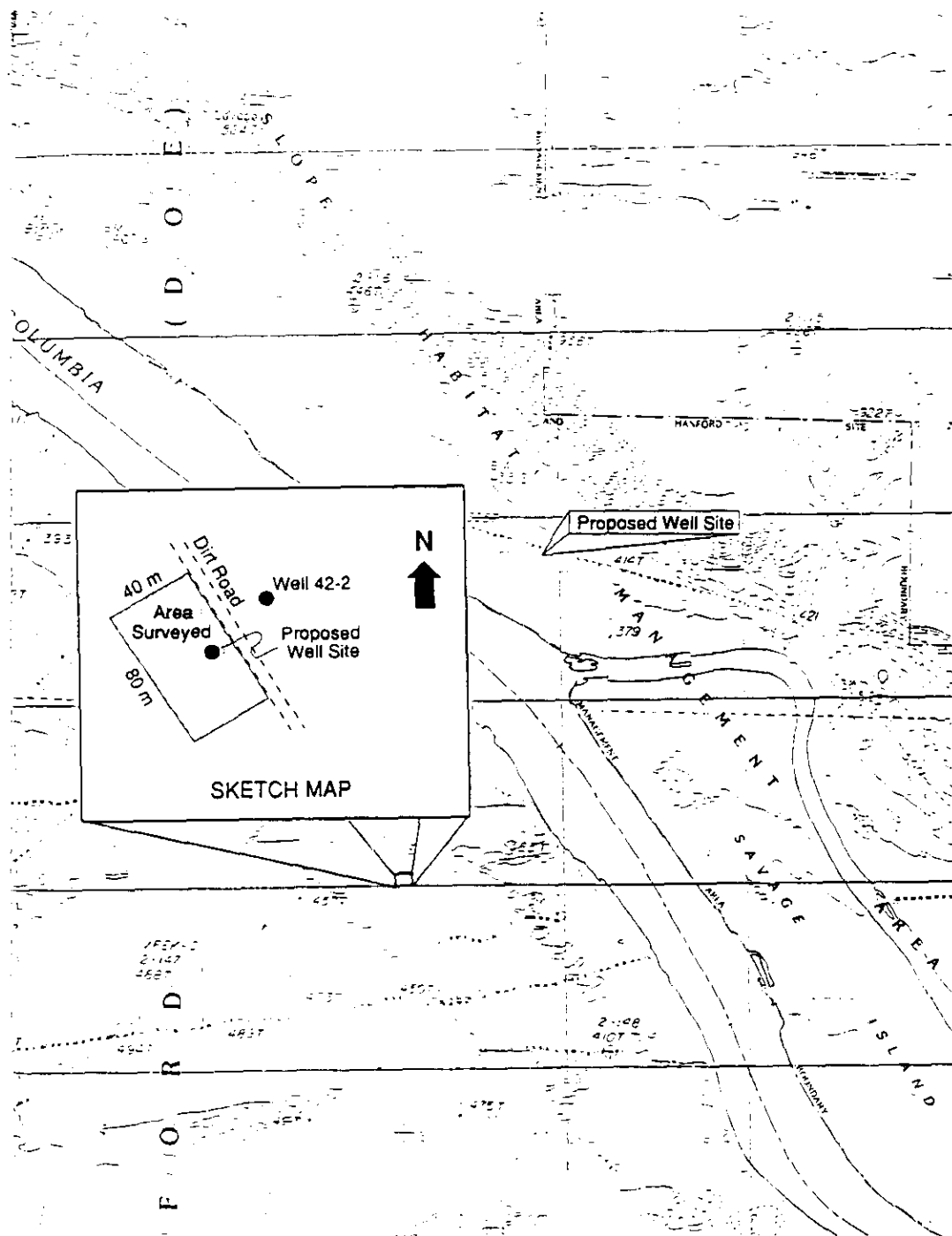


FIGURE A.8. Location of the Proposed Groundwater Well near 42-2, HCRC #89-600-005, on a Portion of the the USGS Savage Island Quadrangle, T 13 N, R 28 E (scale is 1:24,000, 1986 Provisional Edition)

HCRC #89-600-007

**PROJECT 89L-GFV-791A, 400 AREA SEWAGE TREATMENT SYSTEM
UPGRADES**

Requester: D. L. Pursley
Nuclear Energy Projects/Projects Division
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: The project will construct a gravity feed sewer line with manholes between the 400 Area and the Washington Public Power Supply System Plant (Figure A.9). The route will be 3368 m in length with an expected construction impact of up to 21 m wide. This width will accommodate the access road, excavation, and material stacking. The actual excavation width will vary from approximately 1.2 m to 4.6 m, depending on excavation depth. The depth of excavation will be a minimum of 0.9 m to a maximum of 3.7 m.

The proposed project is located in an area of stabilized dunes, over 4 km from the Columbia River, the closest water source. Vegetation is a shrub-steppe community dominated by cheatgrass (Bromus tectorum), Sandberg's bluegrass (Poa sandbergii), and young big sage (Artemisia tridentata).

N. A. Cadoret conducted a pedestrian survey of the proposed gravity feed line on May 26, 1989. The ground was searched for cultural properties in two zigzag transects, between 5 m and 15 m on either side of the staked line.

Cultural Resources: No cultural properties were observed. An historic trail is depicted on an 1867 General Land Office Survey Map as crossing the proposed sewer line (Figure A.10). No trace of this trail was discernable on aerial photographs or in the field. No other cultural properties are known to be located onsite.

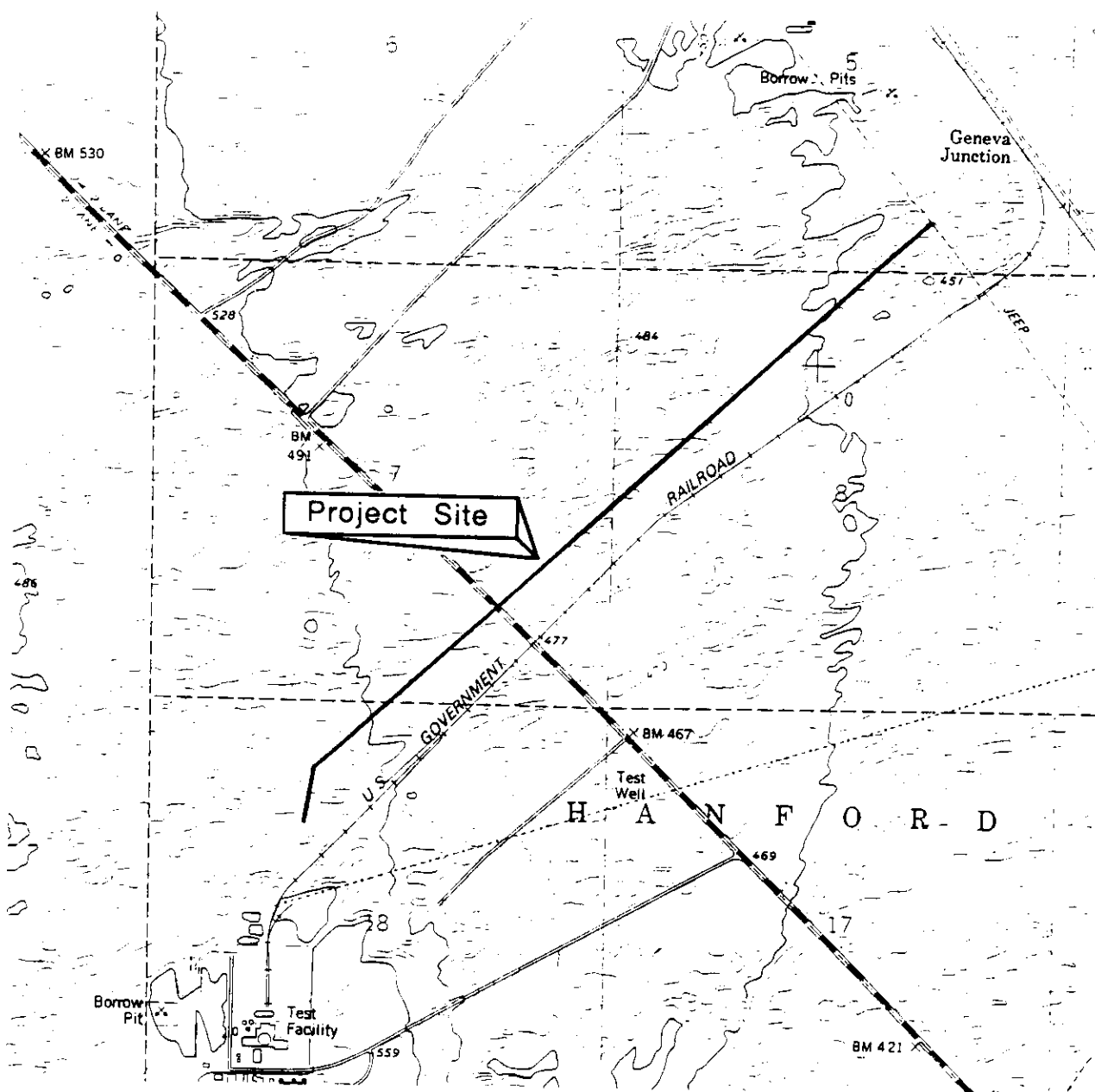


FIGURE A.9. Location of the Proposed 400 Area Sewage Treatment System Upgrades, HCRC #89-600-007, on a Portion of the USGS Wooded Island Quadrangle, T 11 N, R 28 E (scale is 1:24,000, 1978 Edition)

San letter of Feb. 9, 1867

Township 11 North Range 10 East Willamette Meridian

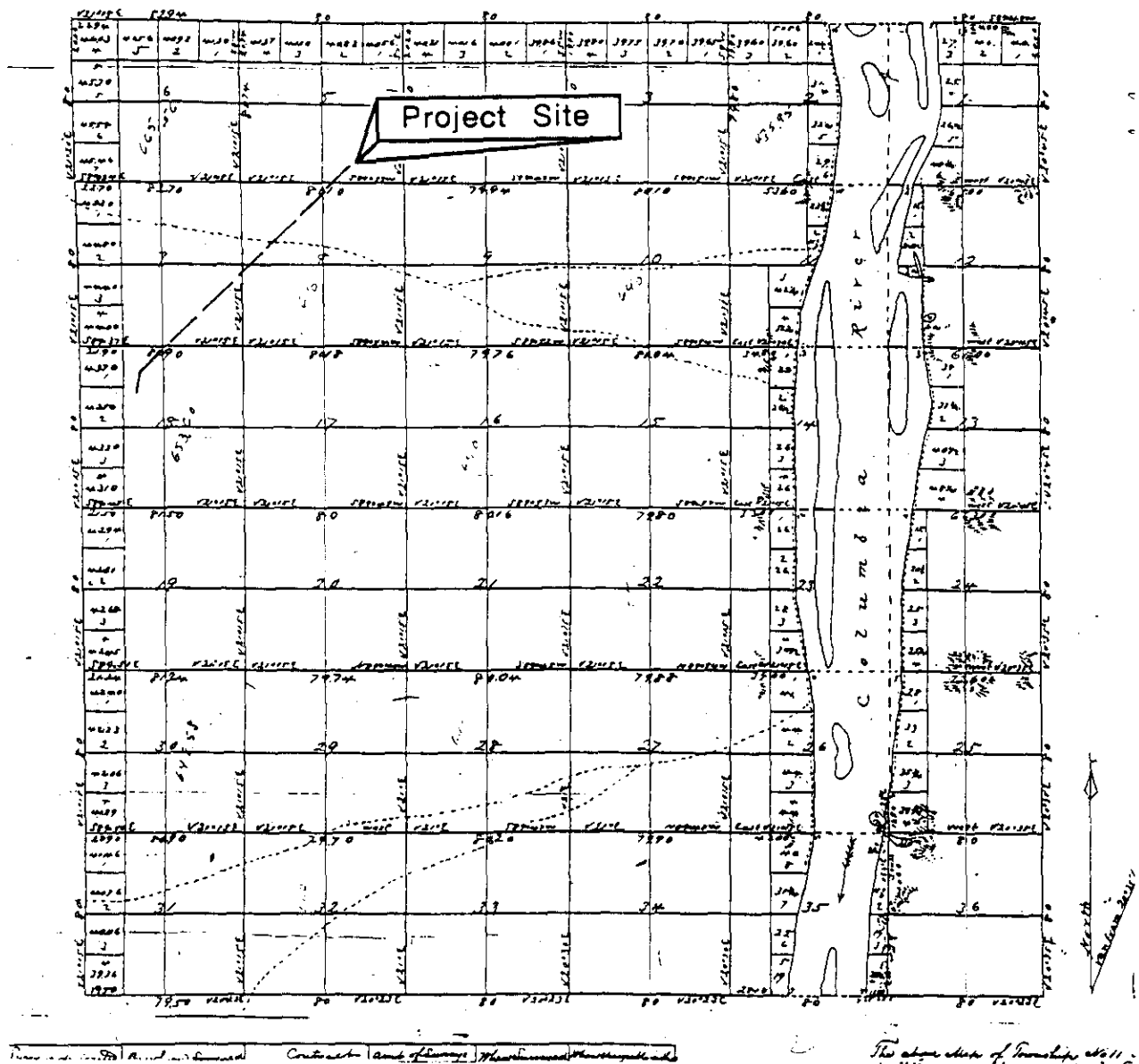


FIGURE A.10. 1867 General Land Office Survey Map and Approximate Location of the Proposed Sewer Line

HCRC #89-600-009

THE FENCED IN SITU VITRIFICATION SITE

Requester: C. L. Timmerman
Pacific Northwest Laboratory
Richland, Washington 99352

Project Description: Pilot and large-scale tests will be performed at the recently fenced In Situ Vitrification Project site in the 600 Area of the Hanford Site (see Figure A.11). Excavations may be to a depth of 12 m.

Our literature and records review show that no cultural properties are known to be located onsite. The project area was examined on August 22, 1989, by P. E. Minthorn. The southern part of the site has been graded and is stabilized with gravel. The northern part of the site and the fenceline was searched at 10-m intervals for cultural properties. Both areas have been disturbed. The northern part of the site has apparently been graded, and the fenceline has been grubbed. Sediments are eolian sands and silt overlying Pleistocene fluvial gravels. The northern part of the area has been partially revegetated with cheatgrass and Russian thistle. The surrounding topography is stabilized dunes.

Cultural Resources: No cultural resources were identified.

HCRC #88-1100-002

**CULTURAL RESOURCES REVIEW OF THE 1100 AREA FENCE
INSTALLATION**

Requester: F. J. Muller, R3-43
Defense Waste Management Projects
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: Five potential CERCLA sites were to be fenced in the 1100 and 600 Areas of the Hanford Site (see Figure A.12). These sites are the battery acid pit, the antifreeze pit, the paint and solvent pit, the discolored soil site, and the Horn Rapids landfill. The fence around the battery acid pit was to describe a square measuring 9 m on a side (Figure A.13), the fence around the antifreeze pit was to describe an irregular hexagon measuring 43 m by 113 m by 73 m by 50 m by 40 m by 56 m (Figure A.14), the fence around the paint and solvent pit was to describe a polygon measuring 116 m by 76 m by 81 m by 38 m, the fence around the discolored soil site was to describe a triangle measuring 99 m by 84 m by 49 m (Figure A.15), and the fence around the Horn Rapids landfill was to describe an irregular hexagon measuring 165 m by 350.5 m by 244 m by 478.5 m by 283 m by 165 m (Figure A.16). Subsequently the project was changed so that warning signs will be put up instead of the chain link fence. The signs will be erected at approximately 30.5-m intervals along the fence lines.

The site of the discolored soil site is located between two abandoned irrigation ditches. These ditches have also been disrupted by roads, railroads, and other developments, and do not appear to meet criteria for inclusion on the National Register. Additionally, the cleanup of this area is a public health concern that overrides any historic value an abandoned ditch may have.

On November 15, 1988, N. A. Cadoret conducted a pedestrian survey of the proposed Horn Rapids landfill fenceline. The corners of the proposed fenced area had been staked. J. C. Chatters surveyed a swath, 40 m wide, along the proposed fenceline.

Cultural Resources: Our literature and records review show that no cultural properties are known to be located onsite. The proposed locations for all of the signs, except for those around the Horn Rapids landfill and the discolored soil site, are in ground which has been disturbed by previous facilities development in the 1100 Area. A pedestrian survey of the disturbed areas was not warranted.

One historic site, HT-88-030, an isolated milk can, and a segment of an irrigation canal were identified during the survey. The site, located in the swale between stabilized dune crests, is a concentration of domestic trash. Artifacts include a cocoa tin, a lard tin, other food cans, two complete bottles, a Fletcher's Castoria bottle, and a bottle embossed "WHITEMORE BOSTON USA 5 FLUID OZ.," a Kerr jar embossed "KERR GLASS CO PATENTED AUG 31 1915 SAND SPRINGS OKLA.," and porcelain bowl fragments with a floral design. The site measures about 7.5 m in diameter, and most artifacts were partially buried. The site probably does not meet criteria for inclusion on the National Register.

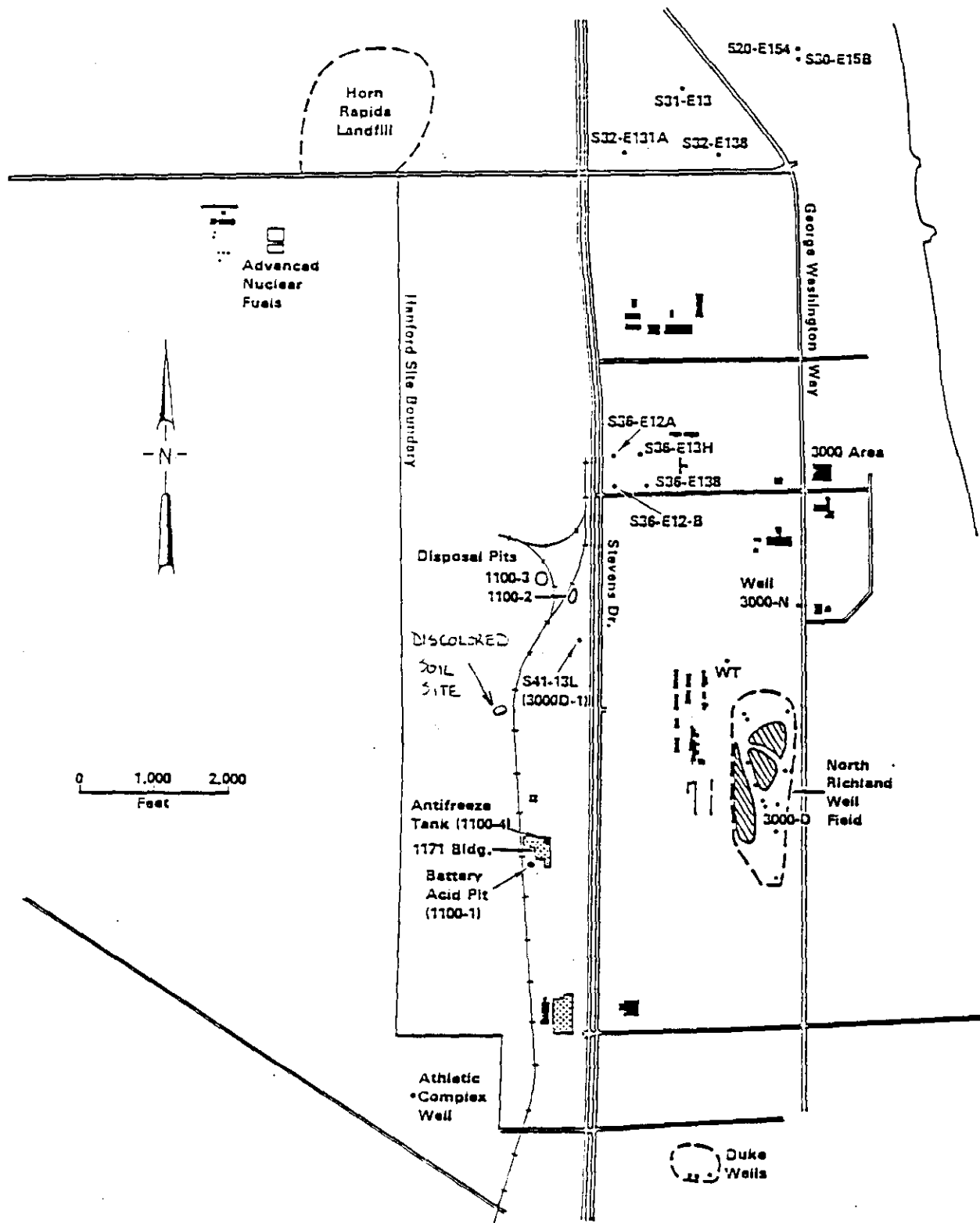


FIGURE A.12. Location of Potential CERCLA Sites, HCRC #88-1100-002

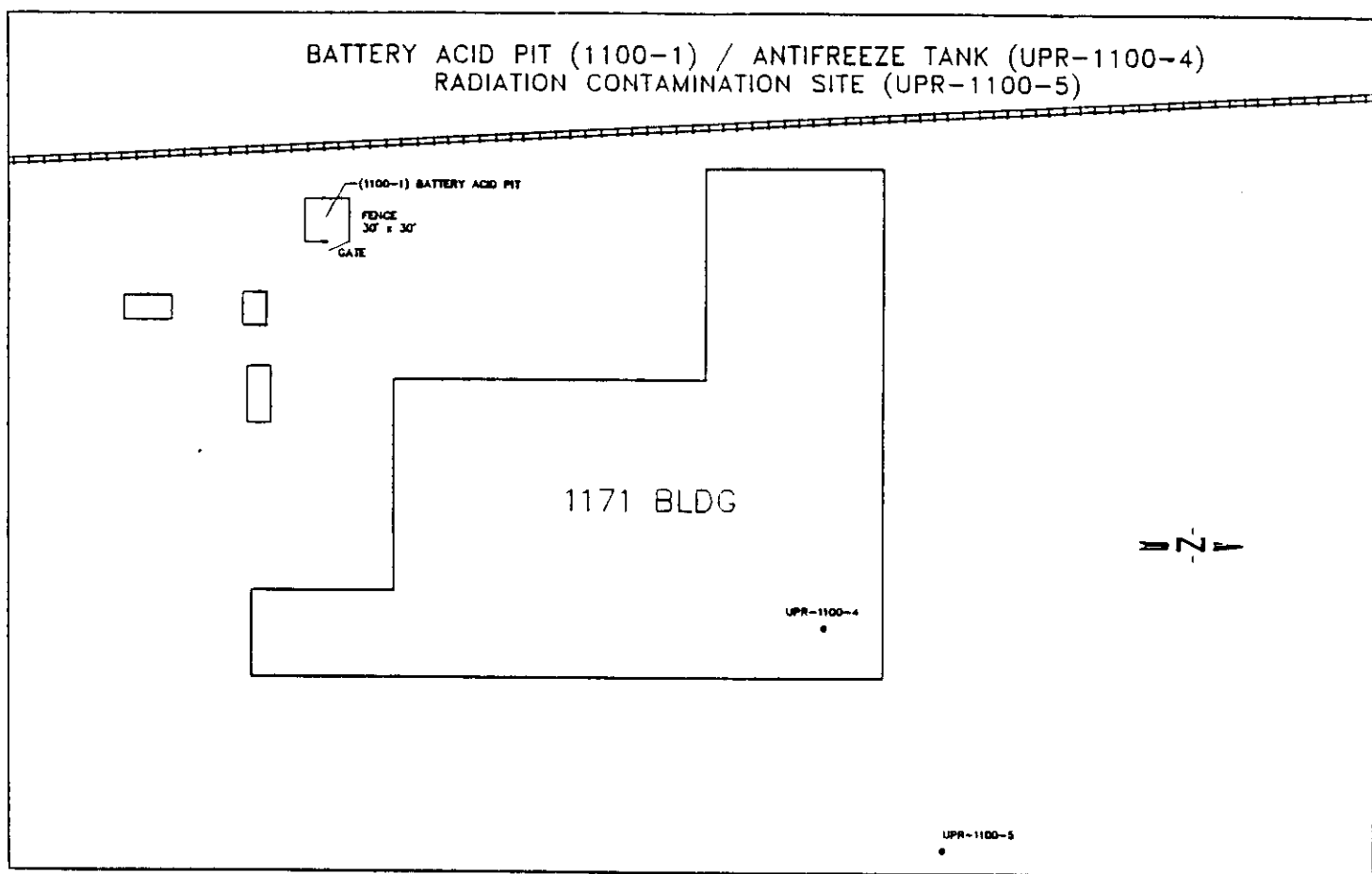


FIGURE A.13. Location of the Proposed Fence Around the Battery Acid Pit,
HCRC #488-1100-001

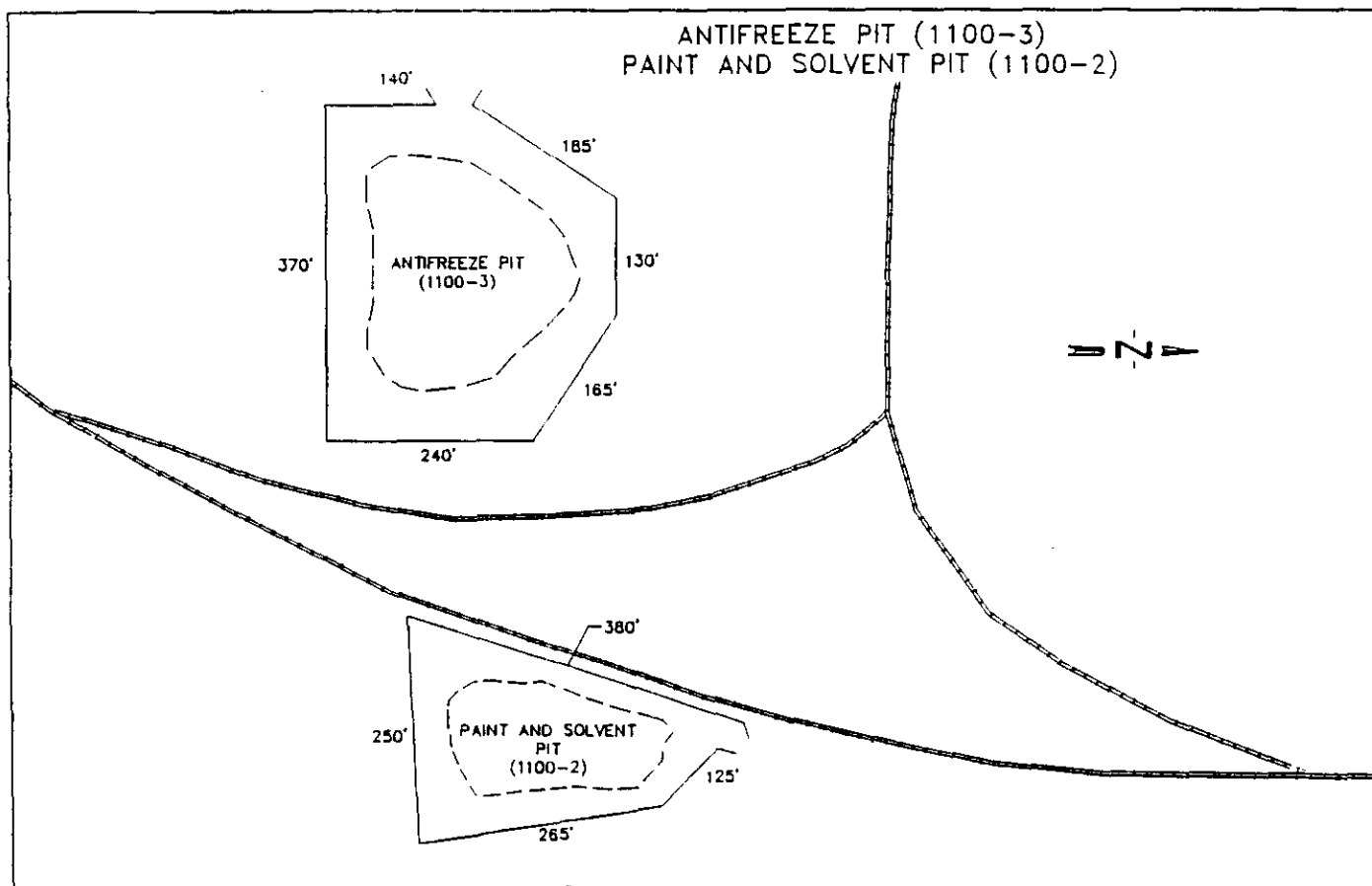


FIGURE A.14. Location of the Proposed Fences Around the Antifreeze and Paint and Solvent Pits, HCRC #88-1100-001

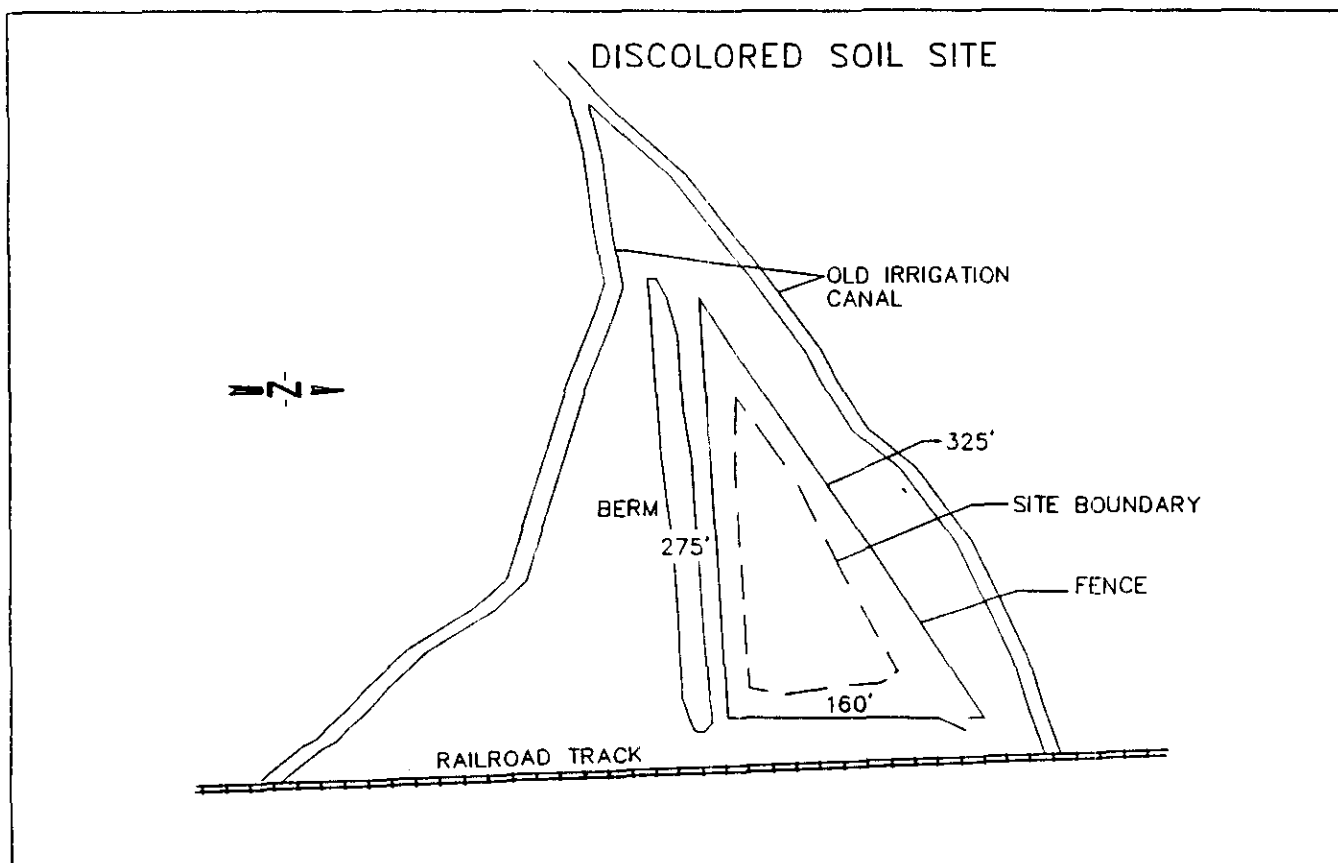


FIGURE A.15. Location of the Proposed Fence Around the Discolored Soil Site, HCRC #488-1100-002

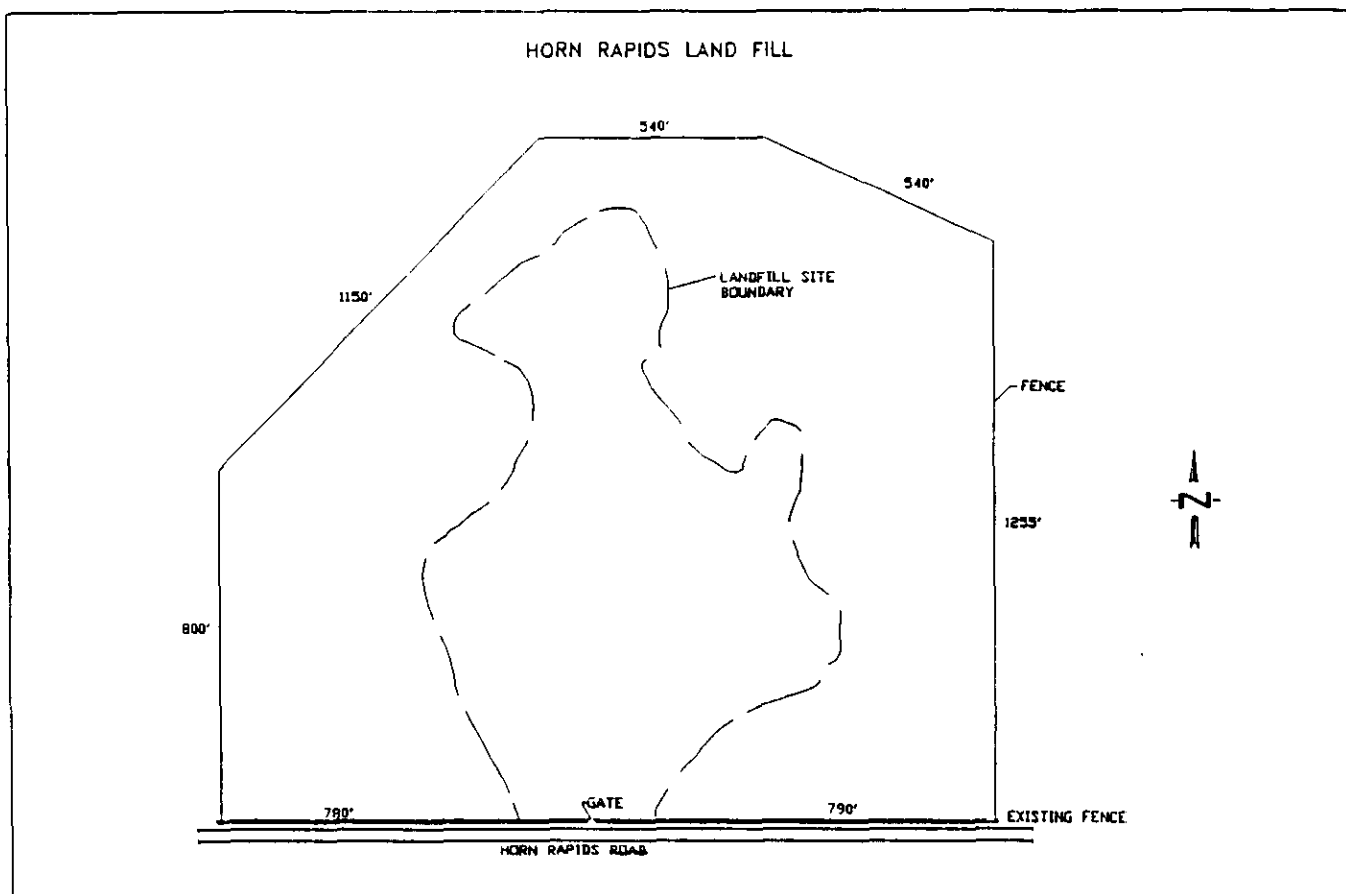


FIGURE A.16. Location of the Proposed Fences Around the Horn Rapids Landfill, HCRC #88-1100-002

HCRC #89-1100-001

THE 1100-EM-1 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

Requester: K. M. Singleton
Environmental Field Services Group
Westinghouse Hanford Company
Richland, Washington 99352

Project Description: The 1100-EM-1 Remedial Investigation and Feasibility Study work plan describes the inactive waste management units to be remedied under CERCLA, including an abandoned battery acid pit, two abandoned gravel pits used for waste disposal, the site of a leaking antifreeze tank, the site of a minor radiation contamination incident, and the Horn Rapids landfill in the 1100 and 600 Areas of the Hanford Site (see Figure A.17).

Soil samples will be collected from within the above-named waste units, as well as from back-ground holes. The excavations necessary for sample collection will be done with a drill rig, unless gravel is encountered, at which point a backhoe may be used. Sampling will also be done within the waste units themselves. The same sampling techniques will be used within the waste units except at the site of the minor radiation contamination incident, where samples will be taken by hand.

On a site tour conducted by K. M. Singleton and S. Skvarek on April 4, 1989, three areas were identified in proximity to the disposal areas where background samples will be taken. Each area was marked by a wooden lath. S. Skvarek requested that an area 61 m around each stake be reviewed.

Our literature and records review showed that no cultural properties are known to be located onsite. The ground at all of the waste units, except the site of the minor radiation contamination incident, has been disturbed by previous use of the facilities. Therefore, a pedestrian survey of these areas was not warranted. Because of safety concerns, the site of the minor radiation contamination incident was also not surveyed, but viewed from a distance. The three areas designated for back-ground sampling have not been disturbed previously, and thus, a pedestrian survey of these areas was necessary as part of our review.

On April 5 and 6, 1989, N. A. Cadoret conducted an intensive pedestrian survey of the three areas to be used for background sampling. An area measuring approximately 61 m around each stake was searched for cultural properties, using a transect interval of 20 m.

Cultural Resources: No historic properties were identified in the areas to the west of the battery acid pit and to the west of the Horn Rapids landfill. In the area to the west of the antifreeze pit, the trace of an old road, and an abandoned irrigation ditch were identified. Portions of the irrigation ditch have been disrupted by roads and the antifreeze pit (see Figure A.18). These features do not appear to meet criteria for inclusion on the National Register of Historic Places.

The site of the minor radiation contamination incident is located between two abandoned irrigation ditches (Figure A.19). These ditches have also been disrupted by roads, railroads, and other developments, and do not appear to meet criteria for inclusion on the National Register. Additionally, the cleanup of this area is a public health concern that overrides any historic value an abandoned ditch may have.

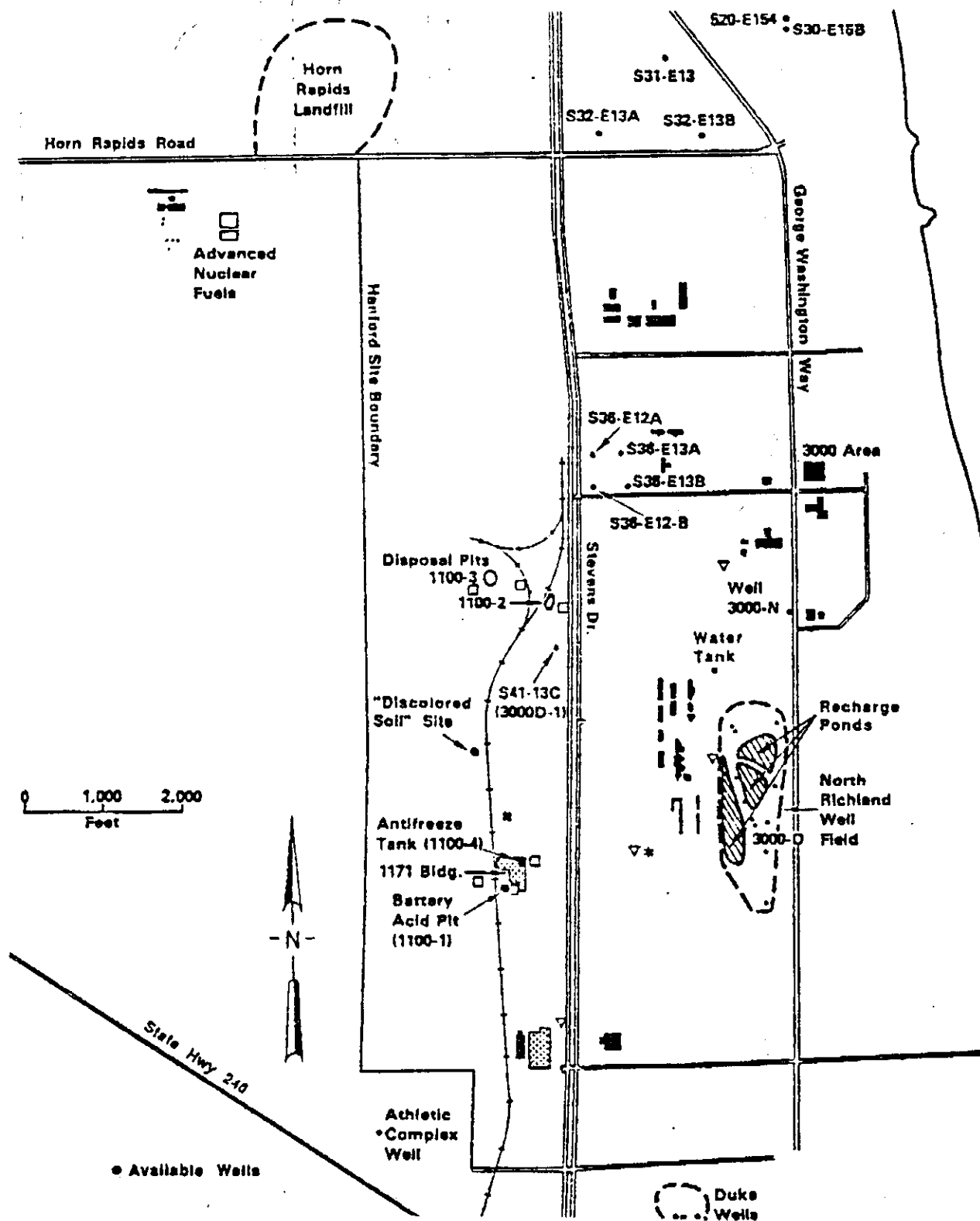


FIGURE A.17. Waste Site Locations for the 1100-EM-1 Operable Unit and Proposed Locations of Background Samples, HCRC #89-1100-001

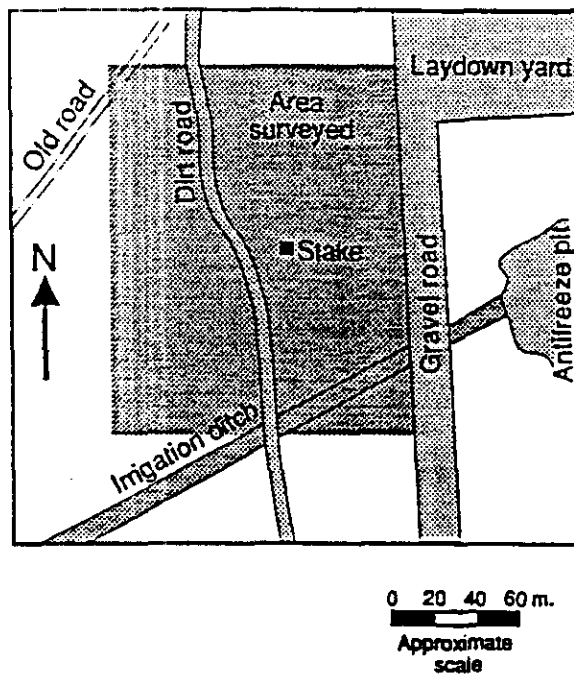


FIGURE A.18. Sketch Map of the Proposed Background Sample Area to the West of the Antifreeze Pit, and Cultural Properties Identified, HCRC #89-1100-001

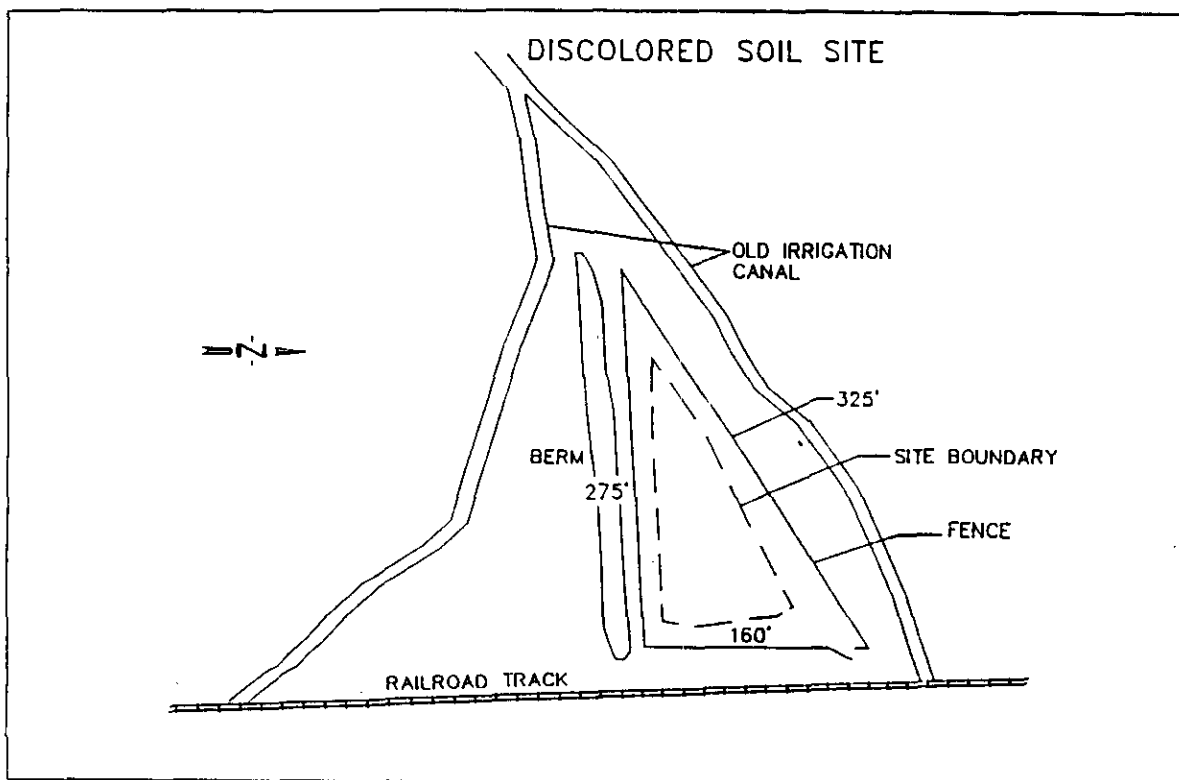


FIGURE A.19. Sketch Map of the Site of the Minor Radiation Contamination Incident (discolored soil site), HCRC #89-1100-001

HCRC #89-1100-002

THE CERCLA GROUNDWATER MONITORING WELLS

Requester: C. E. Hodge, R3-43
Defense Waste Management
Westinghouse Hanford Company
Richland, WA, 99352

Project Description: Fifteen groundwater monitoring wells near possible CERCLA sites need to be drilled in the 1100 and 600 Areas of the Hanford Site (see Figures A.20 through A.22). These wells are MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-15, MW-16, and MW-17.

Our literature and records review show that no cultural properties are known to be located at the proposed well sites. MW-2, MW-3, MW-4, and MW-5 are in ground that has been previously disturbed by road or facilities construction. N. A. Cadoret visited the remaining proposed well sites located in mostly undisturbed ground on July 10 and August 2, 1989. MW-1 and MW-17 are located within an area previously surveyed for HCRC #89-1100-001.

Cultural Resources: The table below summarizes survey strategy and cultural materials observed.

TABLE A.2. Survey Results for CERCLA Groundwater Monitoring Wells

<u>Well Location</u>	<u>Area Surveyed, m</u>	<u>Transect Intervals, m</u>	<u>Cultural Materials</u>
MW-10	40 x 40	10	Cobble feature ~23 m long x 1.5 m wide, probably from field clearing
MW-6	80 x 80	20	None observed
MW-7	80 x 80	20	Milk can and three crimped cans
MW-8, 16	40 x 35	20	Lard can
MW-11	30 x 30	7.5	None observed
MW-12, 13	40 x 40	10	Barbed wire
MW-15	30 x 30	7.5	None observed

None of the cultural materials observed are considered significant. We did, however, suggest that MW-10 be moved so as not to disturb the cobble feature. John Lindberg has agreed to move the well approximately 40 m to the northeast (Telcon 8/25/89).

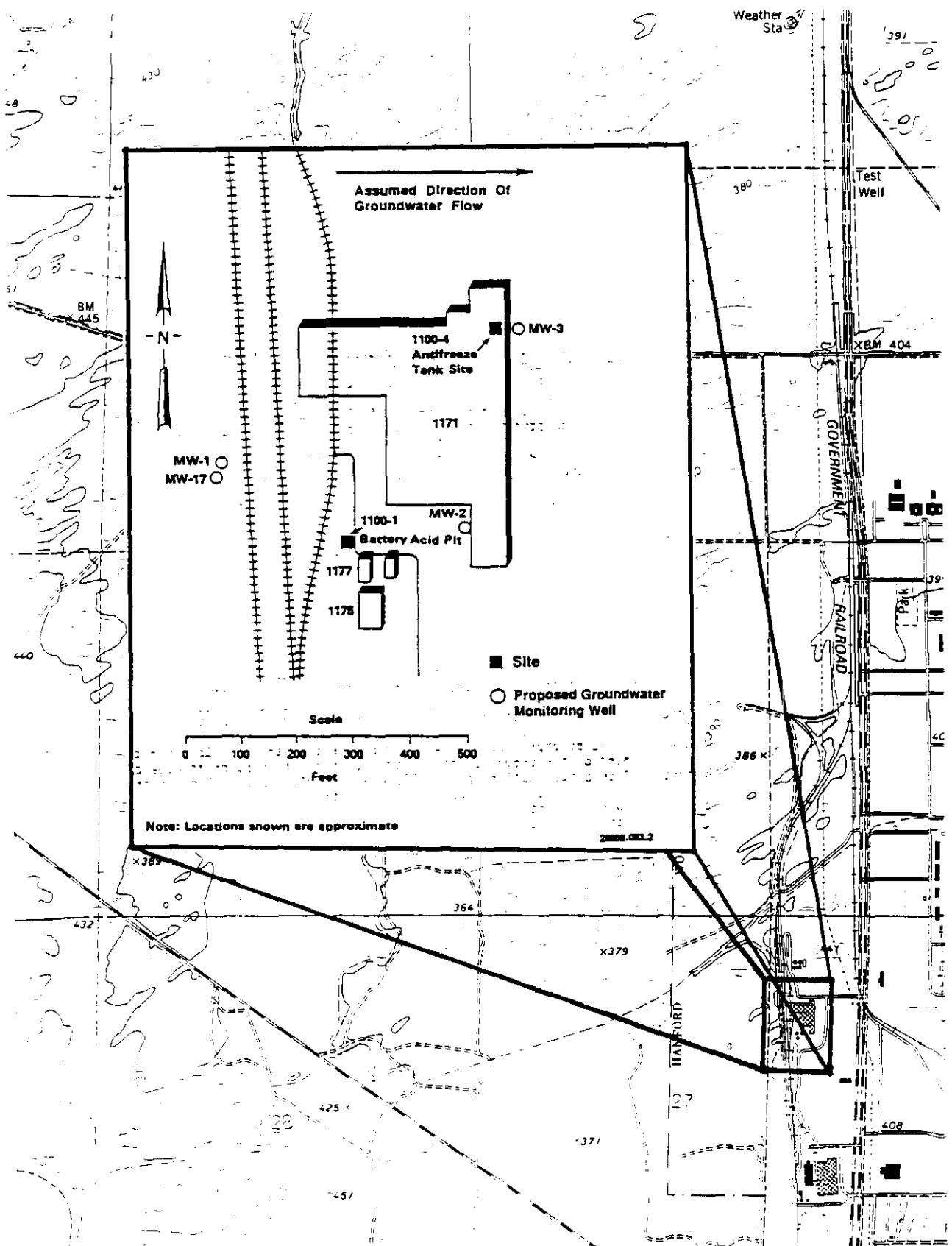
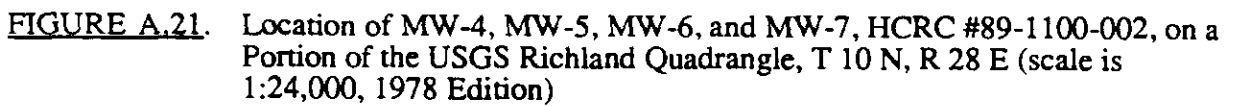


FIGURE A.20. Location of MW-1, MW-2, MW-3, and MW-17, HCRC #89-1100-002, on a Portion of the USGS Richland Quadrangle, T 10 N, R 28 E (scale is 1:24,000, 1978 Edition)



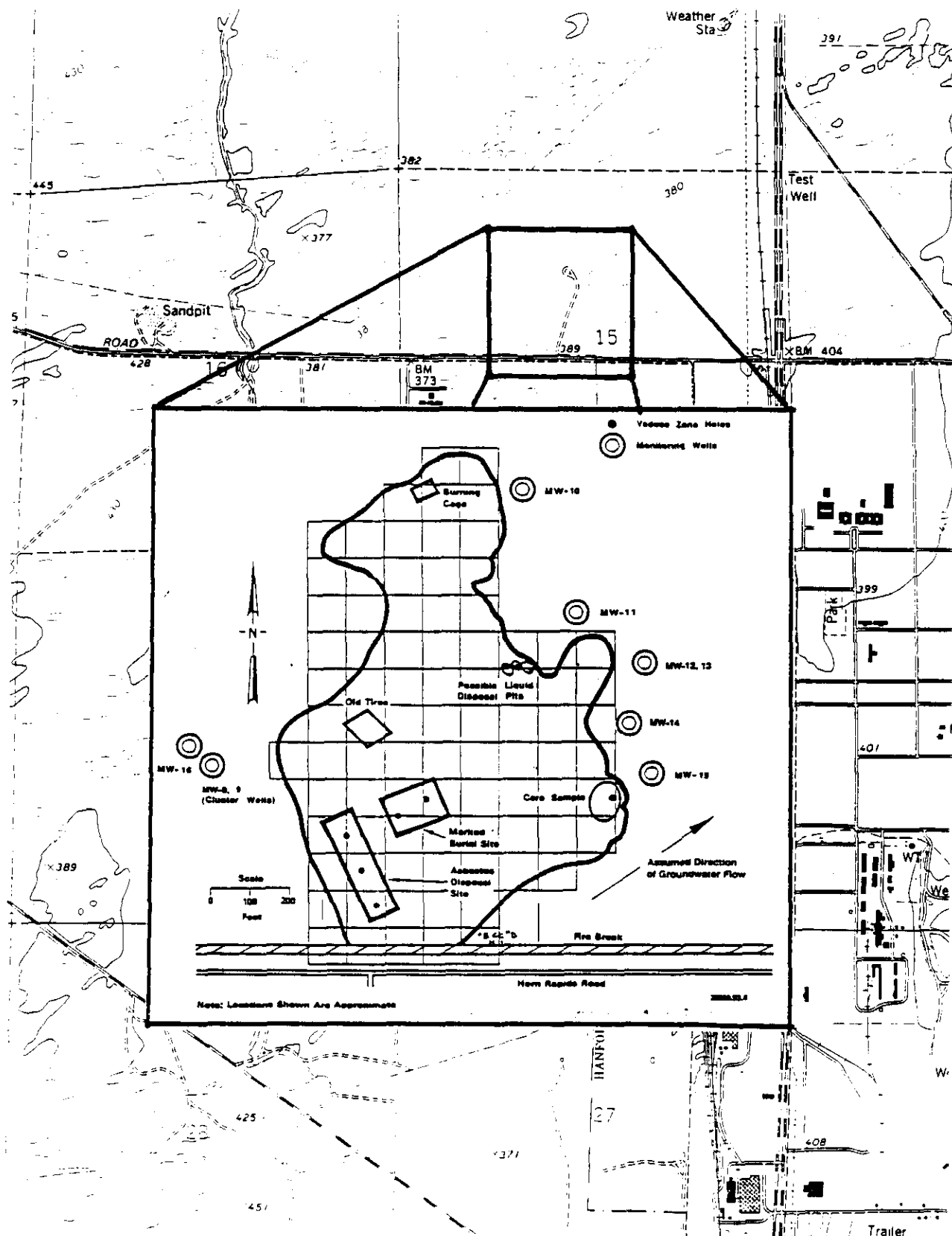


FIGURE A.22. Location of MW-8, MW-10, MW-11, MW-12, MW-13, MW-15, and MW-16, HCRC #89-1100-002, on a Portion of the USGS Richland Quadrangle, T 10 N, R 28 E (scale is 1:24,000, 1978 Edition)

APPENDIX B

CULTURAL RESOURCES MONITORING
OBSERVATIONS FOR THE FY 1989 MONITORING CYCLE

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APPENDIX B

CULTURAL RESOURCES MONITORING OBSERVATIONS FOR THE FY 1989 MONITORING CYCLE

B.1 CEMETERIES

45BN124. This site is described by Rice (1968) as an historic Wanapum burial site located in a dune approximately 150 m from the Columbia River bank. The dune area is approximately 90 by 60 m, and human bones were observed weathering from the dune by Rice's survey staff. HCRL staff members were able to find the dune, which is largely stabilized, and confirm its location and dimensions, but found no evidence of bone.

No anthropogenic disturbance of the site was evident. Erosion was normal for a stabilized dune setting.

45BN128. This cemetery is located on a large island close to the Columbia River's western bank. It is described by Rice (1968) as an historic Wanapum burial site in a dune measuring approximately 150 by 120 m and containing an unknown number of graves. Artifacts representative of the late prehistoric and historic periods were reported along with human bones. When inspected in 1989, the dune was still active, and two large blowouts were present. The larger blowout and a ridge adjacent to it were littered with fragments of human bone, both charred and uncharred. Large stones were also present in small numbers. Two beads, one of shell and another of black glass were found, along with the tip of a serrated projectile point similar to the Rabbit Island Stemmed style. There is no evidence of recent disturbance, although the rusted blade of a shovel lay among the fragments of human bone.

There were no human remains in the second blowout, but a shell midden occurred, consisting of both Margaritifera and Gonidea species and measuring approximately 4 m long by 0.2 m thick. Scattered around the shell midden, with dimensions of 10 by 25 m, were cobble cores, fire-cracked rock (FCR), basalt flakes, anvil stones and a few cryptocrystalline flakes. Where it had not yet weathered from the dune, this deposit was 1.5 m below the dune surface. This component has characteristics common to sites of the Cascade Phase.

Unless there is surface collecting activity, of which no traces were seen, this site receives no impacts except natural erosion at this time.

45BN139. This site is in a dune that dominates the center of the next large, high-water island above 45BN128. Rice states that the site contains an unknown number of unmarked Wanapum burials and measures approximately 150 by 90 m. No artifacts or human remains were observed; the site was identified by Wanapum elders.

During the 1989 inspection, we found that the site had been marked slightly out of position on maps in Rice (1968). There, it is shown as located in the center of the island, where an old orchard stands. The dune is actually upstream of the mapped location, measures approximately 120 by 200 m, and includes site 45BN140. Most of the dune surface is stabilized, but there is one large blowout near its upper end [designated 45BN140, a campsite, by Rice (1968)], in which we found the deflated remains of at least six graves. Five circular concentrations of stones measuring 3 by 5 m in diameter occur in association with fragmentary human bones in an area measuring 30 by 60 m. It is highly probable that many additional graves occur in stabilized portions of these dunes marked by cairns.

No disturbance of the site is evident other than wind erosion. Tracks of wheeled vehicles on other areas of the island indicate that Hanford workers visit the area, and surface collection may be a problem. No direct evidence of such activity was apparent, however.

45BN151. Section 106 reviews have been conducted at this site over the past 2 years in conjunction with decontamination activities. The site, identified by Wanapum elders, is described as being located in an area of low stabilized dunes and boulder fields northwest of the K trench. It is 450 m long and 150 m wide. No artifacts or human remains have been found there by previous archaeological teams. Two sets of markers, one consisting of signs and the other of concrete posts, purport to designate the site boundaries, although they do not coincide with each other or with Rice's (1968) map. We assume that the entire stabilized dune area encompasses the cemetery.

HCRL staff found no grave markers, fragments of bone, or artifacts (other than two cryptocrystalline flakes) on the surface, which is largely covered by various grass species. There is no evidence of recent anthropogenic disturbance.

45BN157b. This site is located in a large dune deposit on Jaeger Island. It lies outside the security area of the Hanford Site and has been subject to looting at least since the 1930s. The site measures approximately 100 m by 300 m and contains artifact deposits that are at least 2 m deep. FCR, animal bone, shell fragments, and cobble tools pave the surface of deflated areas, and artifacts make up the majority of stones found along the beach. Cryptocrystalline flakes are uncharacteristically rare for a site that appears to have a major late prehistoric component (Rice 1980). The site is a traditional Wanapum cemetery and is known to have had many human remains and

grave goods removed from it in the past. In 1987, a complete skeleton was uncovered by a member of the Benton County Sheriff's department and subsequently reburied by the Wanapum.

Given this history, it is not surprising that the site continues to be visited by relic collectors. It is commonly visited for other reasons as well. The nearby Jaeger homestead is a popular camping area, and fishermen put in their boats along the island's shoreline. HCRL staff have made numerous visits to the site, and each time observe footprints in the blowouts and small pits dug into shell features that are still weathering from the site matrix.

45BN306c (45GR306a, 306b). This site appears to be a case of mistaken identity. During his research along the Columbia River in the 1920s, Herbert Krieger of the Smithsonian Institute conducted excavations into a cemetery at the Wahluke (Krieger 1928). According to his report, he excavated in a cemetery located in dunes upstream of a housepit village. Archaeological site records, however, identify the site as being in a dune parallel with and west of the village. Human bones are reported as weathering from the dune.

Students and faculty from Central Washington University, along with HCRL staff members, mapped the Wahluke site, conducted test excavations, and inspected the cemetery area reported by Rice (1968). Despite the presence of blowouts that composed over 30% of the dune area, no bone fragments or evidence of grave cairns were found. However, numerous concentrations of large stones resembling collapsed cairns occur on dunes upstream of the village site (45GR306b), both in the southern end of that site and in the adjacent 45BN306a. This site, rather than the reported 45BN306c, appears to constitute the cemetery.

The site is on DOE land managed by the U.S. Fish and Wildlife Service, and public access is prohibited. There is no evidence for recent disturbance on the cemetery area as described above. However, remnants of camp fires on the site attest to the fact that members of the public make unauthorized visits. Its presence beside a popular salmon and sturgeon fishing hole make the site vulnerable to such visits.

B.2 SITES LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES

B.2.1 Savage Island Archaeological District

45BN118. This site is described by Rice as consisting of between 18 and 24 housepits and associated FCR extending 120 m by 45 m along the Columbia River bank, opposite Savage Island. Cobble tools and hopper mortar bases are said to be present.

HCRL staff were able to locate the site, but found that it lacked any evidence of house pits. It consists instead of a 170-m by 65-m scatter of mussel shell fragments in early to mid-Holocene alluvium. FCR, a very few flakes of cryptocrystalline and basalt, anvil stones and bits of fish and mammal bone also occur. The river bank exposure and four large (12- to 16-m diameter), apparently erosional pits have exposed the shell layers, which extend from approximately 1 to over 2 m below the surface. The site is coterminous with a shoreline spring, and at least 10 depressions have been dug into river cobbles at and below the high water mark, apparently for access to fresh water. The site appears to be quite old, perhaps dating to the early Frenchman Springs or Cascade Phase, or both.

There is no evidence of recent disturbance to the site, which now has a dense cover of cheatgrass.

45BN119. Rice (1968) describes this site as an open camp 105 m long and 45 m wide, consisting of FCR concentrations and having been severely eroded by wind and water. Cobble tools, leaf-shaped and contracting-stemmed projectile points have been found there.

We found the site to be approximately 400 m long with a width of up to 100 m, and approximately the southern two-thirds of the site has been removed during borrowing operations. Close inspection of air photographs in Rice (1968) revealed that this borrowing had already occurred at the time the site was described. Stratigraphically, the site consists of early Holocene alluvial fine sand overlain by a layer of Mazama volcanic ash up to 50 cm thick and covered by eolian sand of varying thickness. The cultural deposit occurs at the contact between eolian sand and Mazama ash and is intermixed with both strata. Artifacts consist of mussel shell, bone, FCR cobble cores, anvil stones, hopper mortar bases, cobble spalls, hammer stones, and a few projectile point fragments and flakes of various materials. These facts plus the description of projectile points found in the 1968 survey place this site in the late Cascade Phase (7000 - 4500 B.P.).

There is no evidence of recent land disturbance at this site, but a ridge of undisturbed site matrix that crosses the borrow pit is being eroded by wind. Recent vehicle tracks to the site do indicate, however, that the site may be subject to surface collection.

45FR258. This site is located in the southern portion of Savage Island and is reported to measure approximately 150 by 300 m. It contains artifacts common to the Cayuse Phase (last 2000 yr) and has been extensively damaged by relic hunters. Burials were reported as having come from this site (Rice 1968).

HCRL staff visited this site only briefly and found that it fit the description provided by Rice. In fact, the looting alluded to in the 1968 report is still going on. Numerous pits of varying

ages were evident. The site is also being subjected to severe stock damage. The entire southern tip of the site is a mass of hoofprints and is devoid of vegetation. This accelerates erosion, and the exposed artifacts attract relic collectors. In addition to these forms of disturbance, at least one hunting blind had been dug into the site.

45FR260. This site is reported as a small campsite (30 by 90 m) along the northwestern edge of Savage Island. It is said to contain FCR, cobble tools, notched sinkers, and projectile points of the Cayuse Phase.

In 1989, the site was found to extend another 100 m to the northwest, but otherwise to fit the description given. In addition, mussel shell, bone fragments, and milling stones were observed.

The site is subject to wind erosion exacerbated by stock damage. Although there is a possibility that relic hunters have looted the site in the past, no evidence of recent digging was observed. However, it is possible that the milling of stock in this area, which is ongoing, has obliterated recent looter pits.

45FR262. Rice (1968) calls this an open camp, 60 by 150 m in extent, consisting of scattered concentrations of FCR and cobble tools, notched net sinkers, a knife, and a hopper mortar base. HCRL staff found his observations to be accurate for the present as well. The site is on a river-level gravel bar, and has probably been entirely deflated.

No evidence of erosion or relic collector activity was seen. Vegetation obscures much of the site surface and probably discourages surface collection.

B.2.2 Hanford North Archaeological District

45BN125. This site is described as an open campsite containing "several housepits ... and a number of cairn burials," extending over 1200 m along the river bank upstream of the Hanford Townsite (Rice 1968, page 7). The silted-in housepits are reportedly on the lower terrace of the site, while the cairn burials are on the upper terrace along a track road.

HCRL staff found the site dimensions to be 560 m by as much as 30 m, but did not find either housepits or cairns. Artifacts are densely scattered in roads, wind hollows, or rodent burrows in a narrow body of alluvium that is backed by a low bar of gravel. We assume that this bar is the upper terrace Rice spoke of, and that the alluvium represents the lower terrace. Artifacts include projectile points of the Rabbit Island stemmed type, Cold Springs side-notched type and small, contracting stemmed types, a dentalium shell bead, flakes of various materials, cobble cores, hammerstones, mussel shell, bone, and FCR. Mussel shell is found in only the downriver

two-thirds of the site, along with the Rabbit Island stemmed point. The small stemmed point, which is at least 1000 years younger, was in an area largely free of shell, while the side-notched point occurred at the northernmost end, where artifact concentrations had dropped off. This indicates that the cultural stratification of the site may be horizontal.

No recent disturbance of the site is evident, and vegetation cover is good. Fresh vehicle tracks to the north end of the site indicate that workers occasionally visit the site, but the presence of three projectile points and a shell bead on the surface indicates that surface collection activity, if any, is infrequent. Closer inspection of the gravel bar for the reported cairns is needed. If the cairns are found, that portion of the site will be added to 45BN124, the cemetery.

45BN126. Rice (1968) described this site as scattered concentrations of FCR, cobble tools and notched net sinkers, some 60 m by 10 m in extent. HCRL staff found this description to be essentially unchanged. Small concentrations of burned and fractured rock occur at the base of a 3-m-high bank of early Holocene alluvium that is devoid of cultural material. The artifacts have apparently eroded out of a lower, late Holocene terrace that still exists just downstream. One of the concentrations, which also includes flakes and cobble cores, occurs adjacent to the upriver end of this lower terrace.

Vegetation cover is dense at this site, and erosion is insignificant. There is no evidence of recent disturbance, and surface collection, if practiced, would be impeded by the vegetation.

45BN132. Records describe this site as scattered concentrations of FCR and a few cobble cores on the northeast corner of the large high-water island south of 100-F. Dimensions are given as 30 by 100 m.

HCRL staff found that the area designated as a site is a deflated gravel terrace that shows evidence of gold mining activity, which can be seen on the photographs in Rice (1968). Only one artifact concentration was observed, near the downriver end of the terrace, where a low rise 20 m long and 4 m wide consisted of over 25% broken stones and a few possible cobble cores. It is entirely deflated, and any small lithics or bone that might have been present appear to have been washed away. We recommend removing this site from the Hanford North Archaeological District and its elimination from the list of sites that require monitoring.

45BN133. This is listed as a housepit site located at the southern tip of a high-water island south of 100-F. Four or five housepits are reported, plus several concentrations of FCR weathering from the cut bank.

The 1989 site visit found a site with a dense cover of vegetation, including giant wildrye, which is found on large housepit sites at Wahluke and Locke Island. Despite the dense cover, one FCR concentration was seen 30 cm below the surface in a cut bank, and two possible housepit depressions were observed. From this we conclude that the site description is accurate.

There is no evidence of erosion except for one small game trail. No holes were seen and surface collection at the site would be impossible.

45BN134. This site, reportedly consisting of small scatters of FCR and hearth areas in the cut bank, could not be found despite careful inspection of the area in which it was mapped. Vegetation cover on the eroded gravel surface below the cut bank diminished visibility there, but the exposed cut bank was readily inspected. We recommend removing this site from the Hanford North Archaeological District.

B.2.3 Locke Island Archaeological District

45BN140. This site is described above under 45BN139, in which it should be included.

45GR302a. This is the largest and most intact of the housepit villages on the Hanford Site. Rice (1968) describes it as containing at least 60 house pits and innumerable storage pits covering an area 760 m long and 150 m wide. Artifacts of all kinds, from hopper mortar bases to large and small corner-notched projectile points were found.

The HCRL staff found Rice's description to be essentially accurate. A crew of students from Central Washington University began mapping of the site, and recorded over 100 depressions larger than 4 m in diameter in the southern one-half of the area. Hearths, bone, shell, and flakes can be seen in cut banks and walls of Rice's test pits to a depth of 2.4 m; housepits exhibit multiple reoccupation episodes. Artifacts are not, however, common on the uneroded site surface, which is covered by historic flood sediments, giant wildrye, and cheatgrass.

Although it is in large measure intact, 45GR302a has sustained various kinds of disturbance, which are largely confined to the beach and bank edge in the southern one-fifth of the site area. Small pits have been scratched in the beach as recently as 1988, and their contents have been screened. Older disturbances consist of two excavations into the west bank that are over 2 m wide and up to 20 m long. They do not appear to be over 50 cm deep, however. More serious disturbance includes small shovel pits (ca 40-cm diameter, up to 50 cm deep) that occur in the centers of approximately 10% of the housepits, all at the southern end of the site. Grass is growing on the backdirt, and dead vegetation fills the holes. In addition, two trenches, 1.5 m wide, 8 m long, and up to 2 m deep lie open in two of the deepest housepits. Pit walls have begun to collapse in some

places, and the pits expose house floor deposits to possible looting (which, surprisingly, has not occurred). These pits were excavated in the early 1970s by a Mid-Columbia Archaeological Society crew under Rice's direction.

B.2.4 Ryegrass Archaeological District

45BN149 (and enclosed 45BN179,180). In his Ben Franklin Dam survey report, Rice (1968) described this site as a group of 8 to 10 housepits on the first terrace above the Columbia River. The map of the site shows the site covering the entire low terrace, approximately 330 m long and 60 m wide. Later, during Section 106 review for the Washington Public Power Supply System (Rice 1980, 1983), Rice located two other sites, 45BN179 (the Hanford Generating Plant Site) and 45BN180, within the boundaries of 45BN149. Site 45BN179 is at the extreme north end of the site; 45BN180, which contained two housepits, was on a slightly higher terrace behind it. Test excavations within 4 m of the northwestern edge of 45BN179 revealed archaeological deposits dating from historic Wanapum back to 7000 yr B.P. Housepits were visible in pit walls, although not on the now gravel-covered surface. Two housepits were identified on the surface at 45BN180, but test excavation into one of them revealed few artifacts.

During the 1989 visit, HCRL staff found that 45BN149, which is intended here to be inclusive of 45BN179 and 45BN180, consisted of two terrace levels of apparent Holocene age. The lower terrace, approximately 1.5 m above the river's high water line, contains Rice's test pit, which contained fine alluvium postdating 4000 B.P. overlying a lag deposit dating to 7000 yr B.P. The upper terrace stands approximately 1 m above the lower, and was the location of housepits identified as 45BN180. Shell midden has been exposed in the upper terrace by recent disturbance and may be an intact portion of the early component found lagged out under the lower terrace. The surface of both terraces has been covered by a layer of sand and gravel up to 30 cm thick, and housepits are no longer visible. Combined, the terraces are not over 40 m wide.

This site has received severe impacts of several kinds since its placement on the National Register. First, the gravel veneer was laid down sometime before Rice's excavations in the late 1970s. Second, a Bonneville Power Administration transmission tower now stands where housepits once were visible in the 45BN180 area, and the housepits were obliterated by surface leveling during construction. Third, a 15-m-wide fire break has been bulldozed the length of the site (45BN149), scoring some 20 to 30 cm into the surface of the upper terrace and damaging an undetermined amount of the early archaeological component there. As much as half the upper terrace has been damaged by this fire break. Lack of weed development on the exposed ground indicates the damage occurred in spring or summer 1989.

Gravel deposition probably preceded the NHPA, and Rice conducted Section 106 procedures for 45BN180. However, the cutting of the fire break was not preceded by Section 106 review.

B.2.5 Hanford Island Archaeological Site

45BN121. Rice (1968) describes this as a housepit site 300 m long and 100 m wide on the southern tip of Hanford Island. It is said to consist of four to five filled housepits, scattered FCR concentrations, net sinkers, and cobble tools.

The HCRL staff found that the island is a 500-m long ellipse of sand that caps a cobble-to-boulder bar. The sediments are alluvial sand up to 3.5 m thick, which is overlain by as much as 1 m of eolian sand at the downriver end. Two sites were found, neither of which contains or is likely to have contained, housepits. One is located within 50 m of the island's downriver end and consists of multiple strata of FCR, cobble cores, and flakes in the bedded alluvium. Artifacts in lag deposits on the beach consist of nearly 50% cobble cores and basalt spall knives and 50% FCR. Any net sinkers that might have been there have been picked up. The second site extends approximately 100 m along a deflated gravel terrace on the northeastern edge of the island and can be seen within 30 cm of the surface of alluvium. Artifact composition is similar to that seen at the southern tip of the island.

A 1-m-deep, 3-m² pit has been excavated into eolian sand at the southern tip of Hanford Island. The excavation does not appear to have disturbed cultural deposits, but it has damaged footings of the warning sign that marks the southern boundary of the restricted area. No other disturbance was evident, although the lack of net sinkers indicates that beaches have been surface collected.

B.2.6 Paris Archaeological Site

45GR317. This site is described as a group of buried housepits and graves weathering out of an alluvial terrace and extensive lag deposits extending for 1000 m along the north bank of the Columbia River. Artifacts described are characteristic of the Cayuse Phase (<2000 yr B.P.). The beach area has been extensively dug over by relic collectors, whereas the intact portions of the site have been left alone. Rice's group dug test pits in the site, but no map of pit locations has been published.

HCRL staff monitored this site in October 1988 and found that, except for being less than half the size reported, its condition is unchanged. Housepits can still be seen in the alluvial terrace, which shows little sign of disturbance, and the beach area has been dug over. We did not see

evidence of graves, however, nor did any pits from which graves could have been removed exist in the river bank. We also found that the lag deposit consisted largely of artifacts attributable to the Cascade Phase, including Cascade and Cold Springs side-notched projectile points.

Disturbance is limited to the activities of relic collectors, who clearly continue to visit this site. A three-pronged tool has been used to scratch at house floor deposits in the cut bank, and extensive pits have been dug within the last year into beach deposits. Active relic collection is more severe here than at any other site except perhaps 45GR258, where intact sediments are being affected.

B.3 SITES NOT LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES

45BN148. This site is described as a group of four to five housepits on the first terrace above the river near the 100-D Area. Inspection in late 1988 found that the site, which extends 200 m along the terrace and has a depth of approximately 40 cm, has been 80% destroyed by soil burrowing activities. No evidence of housepits remains, and there is no indication of disturbance within approximately a decade. Further evaluation is not recommended.

45BN152. Rice (1968) states that this as a 150-m-long, 60-m-wide campsite consisting of scattered FCR concentrations, cobble cores, and notched sinkers on the shoreline above Coyote Rapids. The area is now heavily vegetated, and the river cobbles are slime covered. One hopper mortar base and four cobble cores were observed in the fall of 1988. There is no recent disturbance; the site appears to lie on the beach, since no alluvial terrace exists at this location. No evidence of disturbance could be found, although the lack of notched sinkers demonstrates that surface collection has occurred. Further evaluation is not recommended.

45BN153. Rice (1968) describes this as a campsite containing four to five housepits extending 180 m by 45 m along an alluvial terrace of the Columbia River. A gravel pit is said to have disturbed inland portions of the site. HCRL staff found no evidence of housepits and, despite good bank and surface exposure, saw little evidence of human activity at this location. Further evaluation is not recommended.

45BN154, 45BN155, and 45BN156. These three sites are located on a low-lying gravel terrace downstream of Vernita Bridge. All are described as small concentrations of FCR without associated artifacts. These locations were visited and, despite a thorough search, could not be found. These sites should be removed from state records; no future monitoring is warranted.

45BN157A. When recorded in the late 1960s, this extensive site (Vernita Site) contained housepits, and a wide array of artifacts were visible on the surface (Rice 1968). The housepits, although still distinguishable, had been seriously disturbed by relic collectors. Test excavations were conducted there by the MCAS in 1974 and 1975 to determine if any undisturbed deposits remained and to obtain data to support a possible nomination to the National Register. They found that, although the Cayuse Phase component of the site had been virtually obliterated, there were relatively intact Frenchman Springs and Cascade Phase components in deeper strata. Portions of the site were also leveled during the Hanford Site cleanup at about the same time, intended partially to eliminate the danger posed by the many collector-dug pits.

The Vernita Site of 1989 is changed considerably. The fresh collector excavations are largely absent, and old ones have either become overgrown or are wind eroded to the point of being indistinguishable from natural blowouts. No evidence of housepits remains and, although FCR fragments, shell, and bone still litter the ground, few shaped artifacts can be seen.

Threats to the integrity of this site continue, although at a slower pace than before 1975. Three recently dug pits occur at the site's east end, within 200 m of the Vernita rest stop on State Highway 240. These are 1 to 2 m in diameter and under 1 m deep, and the backdirt has been screened. Two smaller scratchings are present near the middle of the site at river's edge. Neither is over 30 cm across, and neither shows evidence of having been screened. A grove of trees at the site's extreme west end is often used for camping, and boaters launch their craft from at least one area of the site. Frequent visitation of the site by campers and boaters may account for the absence of shaped artifacts on the surface.

Data obtained from the site in the 1970s needs to be analyzed so that nomination to the National Register can proceed. Additional test excavation near the east end of the site would also be useful for nomination

45GR315. This is listed as a 600-m-long, 90-m-wide site containing filled housepits, scattered concentrations of FCR, cobble tools, notched sinkers, a hopper mortar base, large stemmed projectile points, and a small side-notched projectile point (Rice 1968). Despite a thorough search of the area shown on Rice's maps, no cultural material of any kind was found in the vicinity. A much smaller campsite containing possible housepits was located 300 m upstream from the mapped site. That site, which appears to date within the last 2500 yr B.P., has been dug into recently by relic collectors, although pits are all situated along the former high water mark. This new site warrants further investigation and evaluation.

45GR316. This site is described as a 90-m-long, 60-m-wide campsite consisting of scattered FCR and shell concentrations apparently dating to the Frenchman Springs and Late Cayuse Phases (Rice 1968). It had been partially destroyed by pumphouse and access road construction, and had a homestead at its western end. The site observed in 1989 was quite different. Except for the vicinity of the former pumphouse and homestead, this is a dense concentration of artifacts coinciding with a mid-level Holocene terrace that extends for over 550 m. Small shells of Margaritifera falcata and concentrations (actually more like mounds of large FCR) are abundant. Chipped stone is relatively uncommon, but four projectile points attributable to the Frenchman Springs Phase were found. Rodent mounds bear evidence that buried artifact deposits exist to an undetermined depth.

There is no evidence of relic collector activity, but the western one-third of the site has been disturbed by excavation of a gravel pit and leveling of the homestead and pumphouse areas, probably during the Hanford Site cleanup of the mid-1970s. Test excavations should be conducted at this site to obtain data for a National Register evaluation.

45GR318. HCRL staff found that this site still closely fits the earlier description. It is a dune area that exhibits extensive wind erosion and has been intensively worked by relic hunters. Artifacts, including FCR, hopper mortar bases, cryptocrystalline flakes, and cobble cores are abundant. None of the projectile points observed previously were still present. There is no evidence of recent digging by collectors, although the absence of projectile points attests to surface collection. Given its disturbed state, the site does not warrant further evaluation efforts.

45GR320. Rice (1968) described this as a 240-m-long, 45-m-wide scatter of FCR and shell on the north bank of the Columbia River above Vernita Bridge. HCRL staff were able to find only one small, thin scatter of shell on a 15- by 50-m terrace remnant. Two cobble cores were seen, but no FCR. There is no evidence of disturbance. Further evaluation of this site is not warranted at this time.

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APPENDIX C

RANDOMLY SELECTED SURVEY PLOTS

INVESTIGATED IN FY 1989

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APPENDIX C

RANDOMLY SELECTED SURVEY PLOTS INVESTIGATED IN FY 1989

During the 1989 fiscal year, 16 randomly selected plots of 1/4 by 1/4 section size were surveyed for cultural resources as part of the Section 110 inventory of the Hanford Site. Table C.1 summarizes those plots and the cultural resources found in them. HT numbers designate archaeological sites given temporary Hanford Site numbers; HI designates isolated artifacts.

TABLE C.1. Summary of Random Plots Surveyed as of August 30, 1989

Plot #	Legal Description	Date Surveyed	Isolates	Sites	Other Cultural Remains
113 LS	SW 1/4, SE 1/4, sec 33, T 11 N, R 26 E	7/12/89	HI-89-003: Utilized flake HI-89-004: 1873 dime	HT-89-003: Historic camp	Barbed wire
187 STL	SW 1/4, SW 1/4, sec 2, T 10 N, R 26 E	7/14/89		HT-89-004: Historic trash and structural remains	Modern beer can Barbed wire Army remains
184 CCFG	SW 1/4, NE 1/4, sec 20, T 12 N, R 25 E	7/20/89	HI-89-005: Double-soldered tin can HI-89-006: Double-soldered tin can HI-89-007: Double-soldered tin can HI-89-008: Double-soldered tin can	HT-89-005: Historic trash dump HT-89-006: Hunting blind? HT-89-007: Historic or prehistoric cairn	
21 LS	NW 1/4, SW 1/4, sec 19, T 12, N, R 26 E	7/21/89	HI-89-009: Double-soldered tin can HI-89-010: Quartzite pebble tool	HT-89-008: Historic trash scatter HT-89-009: Milling stone HT-89-010: Hopper mortar base and lithic scatter	
2029 SD	SW 1/4, SW 1/4, sec 26, T 11 N, R 27 E	8/1/89			6 milk cans, Kerr jar
1548 SD	SE 1/4, NW 1/4, sec 10, T 11 N, R 27 E	8/1/89			
1472 SD	SW 1/4, SW 1/4, sec 3, T 11 N, R 27 E	8/3/89	HI-89-011: Ccs flake		
1471 SD	SE 1/4, SE 1/4, sec 4, T 11 N, R 27 E	8/3/89			

TABLE C.1. (contd)

Plot #	Legal Description	Date Surveyed	Isolates	Sites	Other Cultural Remains
797 SD	NW 1/4, SW 1/4, sec 19, T 12 N, R 26 E	8/9/89			
1718 SD	SE 1/4, NE 1/4, sec 15, T 11 N, R 27 E	8/10/89			
1181 SD	SW 1/4, NW 1/4, sec 36, T 12 N, R 27 E	8/10/89			
141 SL	NE 1/4, SW 1/4, sec 17, T 12 N, R 25 E	8/15/89		HT-89-011: Lithic scatter	
46 AF	NE 1/4, NW 1/4, sec 5, T 11 N, R 25 E	8/15/89	HI-89-012: Triple-soldered can	HT-89-008 continues - see 21 LS	Irrigation canal Old road
759 SL	SW 1/4, NE 1/4, sec 5, T 10 N, R 27 E	8/17/89		HT-89-012: Lithic scatter HT-89-013: Cairn and bottle frag	
743 SL	NE 1/4, NE 1/4, sec 5, T 10 N, R 27 E	8/17/89			Lard can
103 ES	SW 1/4, SW 1/4, sec 29, T 12 N, R 26 E	8/21/89		HT-89-014: Cairn and bottle fragments	Purple glass frags

LS = Landslide
 STL = Steep slope
 CCFG = Cold Creek fine-grained
 SD = Stable dune
 SL = Slope
 AF = Alluvial fan
 ES = Ephemeral stream

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Washington, D.C. 20004

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U.S. Army Corps of Engineers
Box C-3755
Seattle, WA 98124-2255

Dennis Canty
National Park Service, Pacific
Northwest Region
83 King St., Suite 212
Seattle, WA 98104

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U.S. Army Corps of Engineers
Walla Walla District
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Bruce Crespín
U.S. Bureau of Land Management
Burns, OR 97720

2 Colville Confederated Tribes
Attn: Tribal Council
Adeline Fredin
P.O. Box 150
Nespelem, WA 99155

2 Nez Perce Tribe
Attn: Tribal Council
Alan Slickpoo
P.O. Box 305
Lapwai, ID 83540

2 The Confederated Tribes of the
Umatilla Indian Reservation
Attn: Tribal Council
Jeff Van Pelt
P.O. Box 638
Pendleton, OR 97810

2 The Wanapum Indian Tribe
Attn: Tribal Council
Rex Buck, Jr.
P.O. Box 275
Beverly, WA 99321

2 The Yakima Indian Nation
Attn: Tribal Council
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